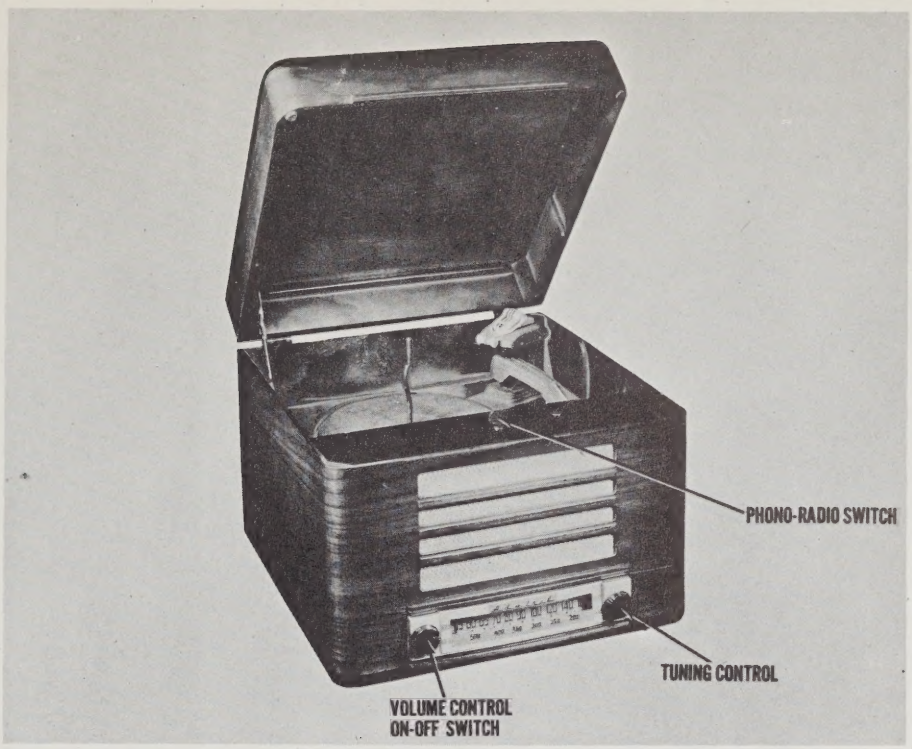
ADMIRAL
CHASSIS MODEL 5B1A



ADMIRAL MODEL 6RT42A

TRADE NAME	Admiral, Chassis Model 5B1A (Model 6RT42A)
MANUFACTURER	Admiral Corp., 3800 Cortland St., Chicago 47, Ill.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT/G Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1630KC RATING .240 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap. fully closed and set left edge of dial saddle to 1st reference at extreme left end of dial backplate. (See sketch) Use isolation transformer if available. If not, connect a capacitor in series with low side of signal generator and B-. Volume should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
250MMFD	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output.
250MMFD	"	1630KC	"	"	A5	" " " "
	Loop	1400KC	Tune for maximum output.	"	A6	Install receiver in cabinet. Fashion loop of several turns of wire and radiate signal into loop of receiver. Remove plug button above A6 and adjust for maximum output.

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control knobs.
2. Remove "C" lock washer and two washers from radio-phono switch.
3. Remove phono-motor plug from receptacle.
4. Unsolder phono-pickup leads from terminal strip on cabinet(shield to terminal with mounting screw).
5. Remove nut on phono-motor holding ground lead. Remove lead.
6. Remove two screws holding loop antenna to cabinet. Remove loop.
7. Remove four Phillips head screws and washers holding chassis mounting board. Remove chassis on mounting board.
8. Remove four chassis mounting bolts. Remove chassis from mounting board.

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PARTS LIST AND DESCRIPTIONS

ADMIRAL CHASSIS MODEL 5B1A (Model 6RT42A)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT/G	35Z5GT/G	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	30	150	67A8	PRSA150-30-	EZ42215	TN129	DSB-403020-	TA-330	Filter - Yellow
B	30	150		30			150	"	- Red
C	20	150		PRS150-20				UT-201	" - Blue
6A	50	150		PRSA150-50-	BRD3515	2N520	M-5030-150	TA-530	Filter ‡
B	30	150		30				"	"
7	.05	400	64B1-22	484-05	DT4S5	TP426	S-4-05	TC-15	Line Filter
8	.05	400	64B1-22	484-05	DT4S5	TP426	S-4-05	TC-15	Phono Shield Isolation
9	.1	400	64B1-20	484-.1	DT4P1	TP428	S-4-1	TC-1	Line Isolation
10	.02	400	64B1-24	484-02	DT4S2	TP423	S-4-02	TC-12	Output Plate Bypass
11	.01	400	65A3-10	484-01	DT4S1	TP421	S-4-01	TC-11	Audio Coupling
12	.01	400	65A3-10	484-01	DT4S1	TP421	S-4-01	TC-11	" "
13	.01	400	65A3-10	484-01	DT4S1	TP421	S-4-01	TC-11	Tone Compensation
14	.01	400	65A3-10	484-01	DT4S1	TP421	S-4-01	TC-11	" "
15	.02	400	64B1-24	484-02	DT4S2	TP423	S-4-02	TC-12	Fixed Padder
16	.1	200	64B1-30	484-.1	DT4P1	TP428	S-4-1	TC-1	AVC Filter
17	.005	600	64B1-12	684-005	DT6D5	TP408	S-6-005	TC-25	Ext. Ant. Coupling
18	500	500	65B7-27	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	Audio Plate Bypass
19	200	500		1468-0002	5W5T2	MC237	MO.5-32	1FM-32	Diode Filter
20	15	500	65B5-3						Fixed Trimmer
21	50	500	65B7-11	1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	Osc. Grid Capacitor

‡Used in models having filter choke.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	500KΩ	1	75B3-2	DTM283	D18-133XX	AT-92	Volume Control
B	Shaft		Not Req.	S825	E	KSS-3	Attach to 22A per instructions
C	Switch		" "	M26	41	SW-A	" " " "

RESISTORS

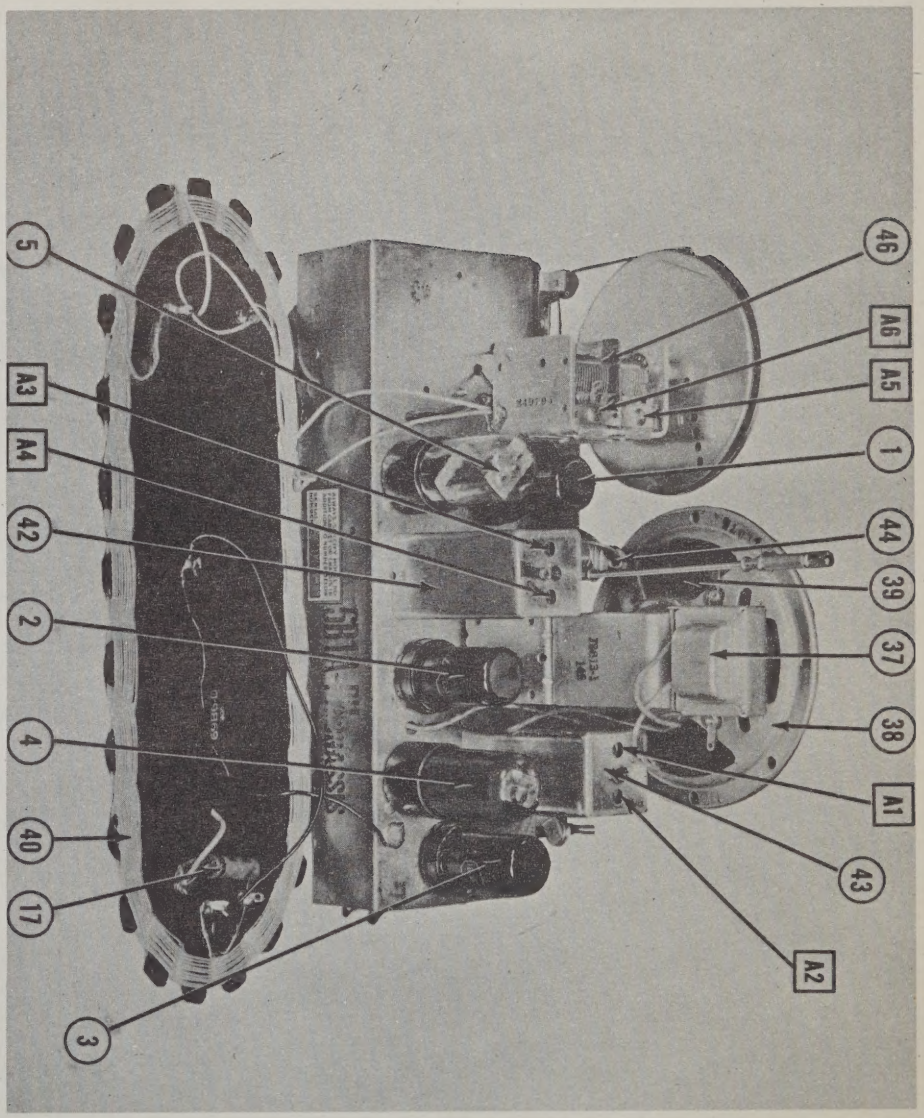
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
23	22KΩ	½	60B8-223	BTS-22K	Red-Red-Or. Oscillator Grid
24	10 Meg.	½	60B9-106	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
25	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. " "
26	47KΩ	½	60B8-473	BTS-47K	Yl.-Vi.-Or. Tone Compensation
27	27KΩ	½	60B8-473	BTS-27K	Red-Vi.-Or. " "
28	10 Meg.	½	60B8-106	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
29	220KΩ	½	60B8-224	BTS-220K	Red-Red-Yl. AF Plate Load
30	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. Output Grid
31	150Ω	½	60B8-151	BW-½-150	Br.-Grn.-Br. Output Cathode
32	150KΩ	½	60B8-154	BTS-150K	Br.-Grn.-Yl. Line Isolation
33	1000Ω	1	60B28-2	BTA-1000	Br.-Blk.-Red Filter - See Note
34	150Ω	1	60B28-1	BW-1-150	Br.-Grn.-Br. " " "
35	33Ω	1	60B28-3	BW-1-33	Or.-Or.-Blk. Surge Limiter - See Note

Note-Not used in models utilizing filter choke.

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (@ CURRENT 1000~)	REPLACEMENT DATA: ADMIRAL PART NO.	STANCOR PART NO.	THORDARSON PART NO.	INSTALLATION NOTES
36	.067A	319Ω	3.6 Henries	74A1	C-1355	T20C52	Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.		INSTALLATION NOTES
37A	2700Ω	3.1Ω	175Ω	.6Ω	Part of 78B13-1	A-3876*	T22S45*		*Bend mounting tabs down, file out slots and mount on original bracket. Alternate transformer.
B	2900Ω	3.1Ω	255Ω	.6Ω	98A4	A-3876*	T22S45*		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
38	FIELD PM	VC IMP. 3.1Ω	78B13-1	ST-107† Mod. P5-V		†Drill and tap magnet frame.
39	CONE DIA. 4-3/4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA MEISSNER PART No.	
40	Loop Ant.	0Ω	1.3Ω	69B6 or 69B10		
41	Osc. Coil		5Ω	69A5	14-1040	
42	Input IF	18Ω	18Ω	72B3	16-6658	
43	Output IF	21Ω	22Ω	72B4	16-6660	

DIAL LIGHT

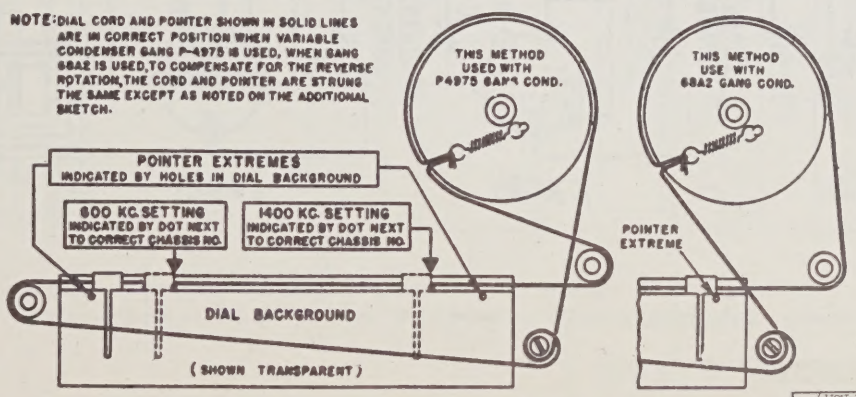
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ADMIRAL PART No.		INSTALLATION NOTES
44	Bayonet	6.3	0.15	Brown			Type 47

MISCELLANEOUS

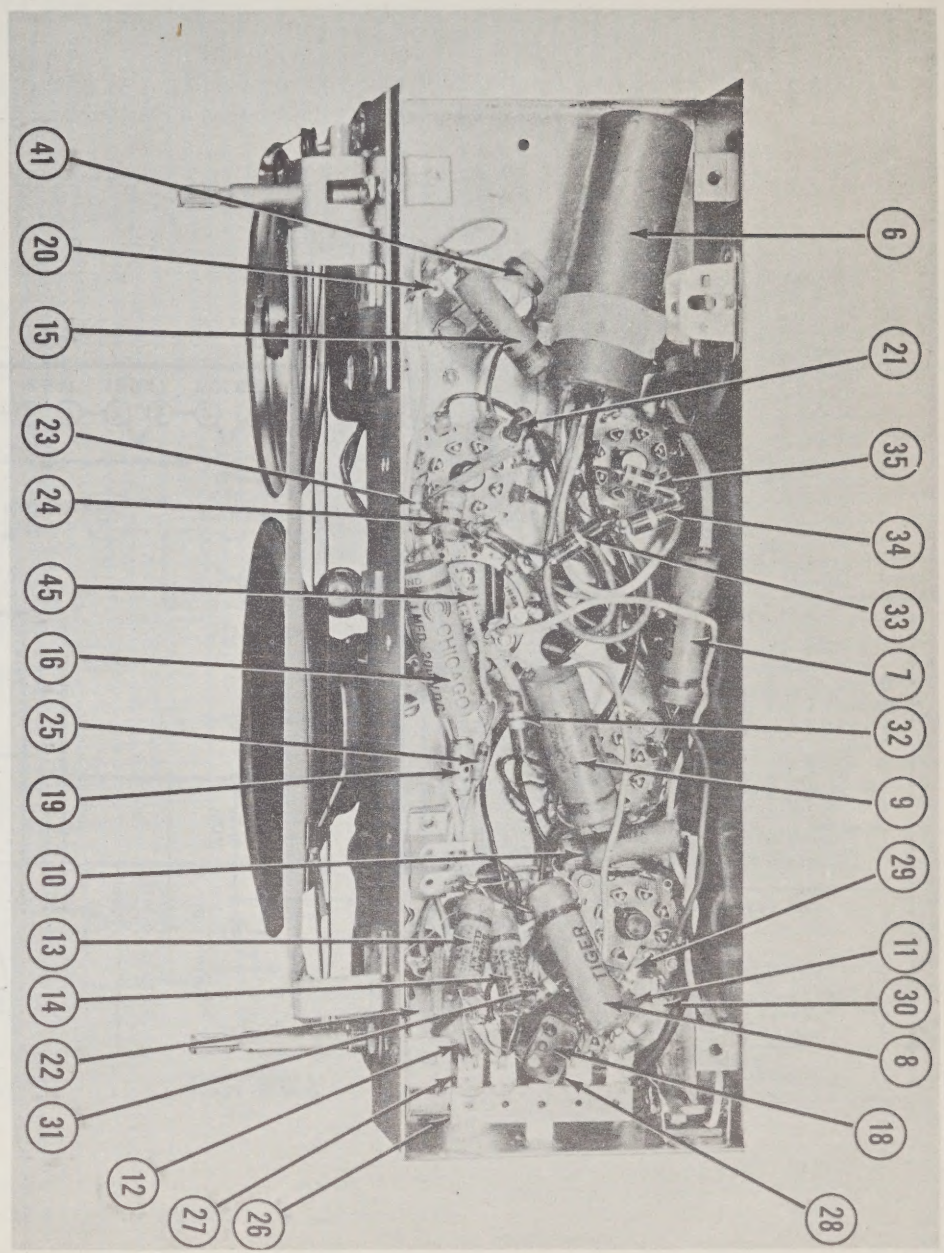
ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
45	Switch	77A8	Radio-Phono
46	2 Gang Var. Cap.	68A2 or P4975	18-204 MMF, 22-459 MMF
	Dial Scale	21B4-1	
	Pointer	25A1-2	
	Phono Motor	407B3	or 407B1 or 407B2
	XTAL Cartridge	409A1	

POINTER SETTINGS AND DIAL CORD STRINGING

NOTE: DIAL CORD AND POINTER SHOWN IN SOLID LINES ARE IN CORRECT POSITION WHEN VARIABLE CONDENSER GANG P-4975 IS USED. WHEN GANG 68A2 IS USED, TO COMPENSATE FOR THE REVERSE ROTATION, THE CORD AND POINTER ARE STRUNG THE SAME EXCEPT AS NOTED ON THE ADDITIONAL SKETCH.

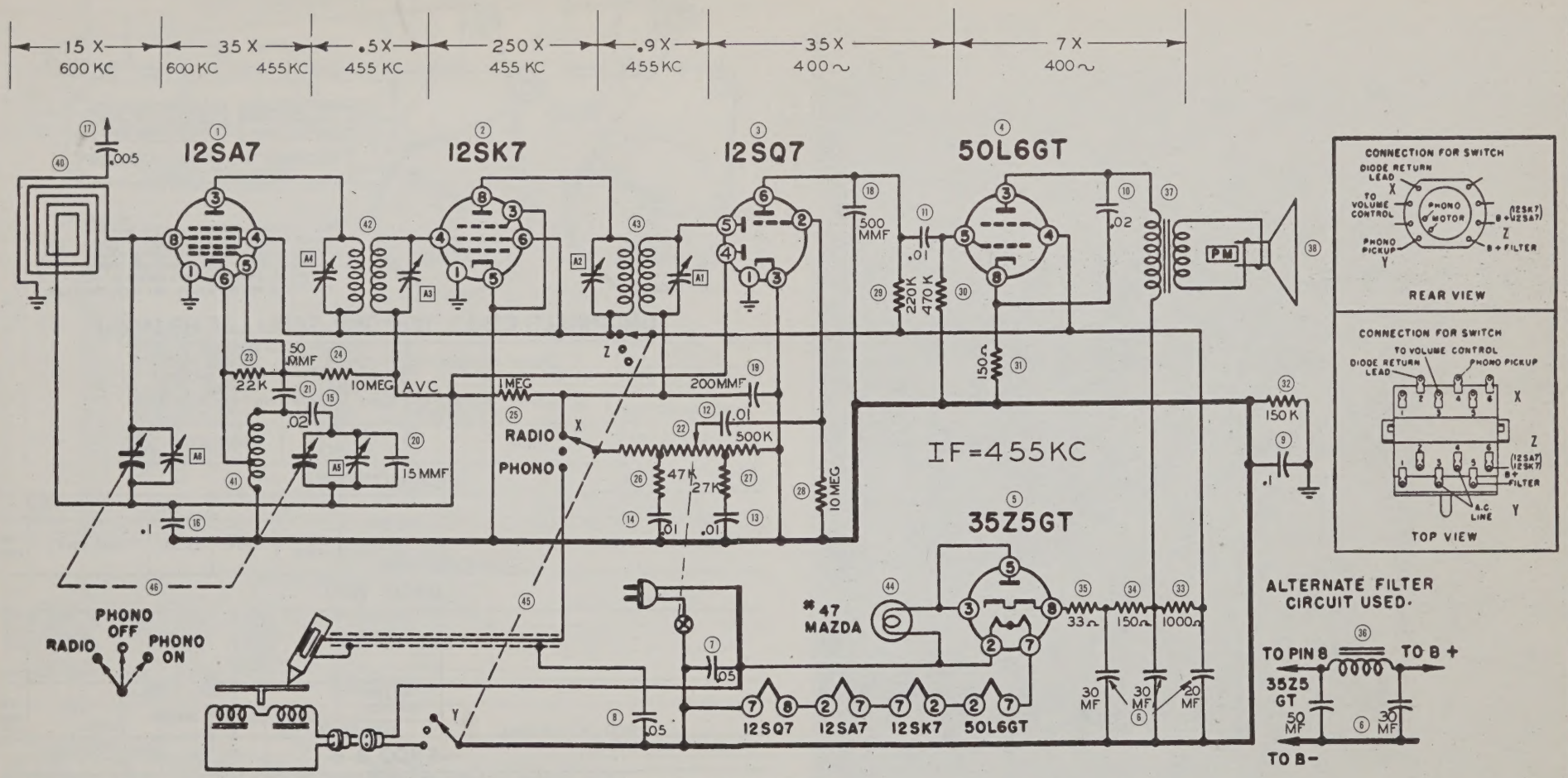

THIS METHOD USED WITH P4975 GANG COND.
THIS METHOD USE WITH 68A2 GANG COND.
POINTER EXTREMES
INDICATED BY HOLES IN DIAL BACKGROUND
600 KC. SETTING
INDICATED BY DOT NEXT TO CORRECT CHASSIS NO.
1400 KC. SETTING
INDICATED BY DOT NEXT TO CORRECT CHASSIS NO.
POINTER EXTREME
DIAL BACKGROUND
(SHOWN TRANSPARENT)

CHASSIS—BOTTOM VIEW



ADMIRAL CHASSIS MODEL 5B1A (Model CRT42A)

ADMIRAL CHASSIS MODEL 5B1A (Model CRT42A)



RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	13V.AC	87V.DC	87V.DC	-2.7V.DC	0V.	24V.AC	4V.DC
2	12SK7	0V.	35V.AC	0V.	115V.DC	0V.	87V.DC	24V.AC	87V.DC
3	12SQ7	0V.	18V.DC	0V.	115V.DC	115V.DC	60V.DC	0V.	13V.AC
4	50L6GT	0V.	35V.AC	102V.DC	87V.DC	0V.	0V.	85V.AC	5.7V.DC
5	35Z5GT/G	0V.	117V.AC	113V.AC	118V.DC	113V.AC	112V.DC	85V.AC	121V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	150K Ω	12 Ω	60K Ω	60K Ω	22K Ω	.5 Ω	24 Ω	1.2MEG.
2	12SK7	150K Ω	36 Ω	0 Ω	1.2MEG.	0 Ω	60K Ω	24 Ω	60K Ω
3	12SQ7	150K Ω	10MEG.	0 Ω	1.2MEG.	480K Ω	280K Ω	0 Ω	12 Ω
4	50L6GT	INF.	36 Ω	60K Ω	60K Ω	460K Ω	INF.	78 Ω	135 Ω
5	35Z5GT/G	150K Ω	102 Ω	100 Ω	60K Ω	100 Ω	60K Ω	78 Ω	60K Ω

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

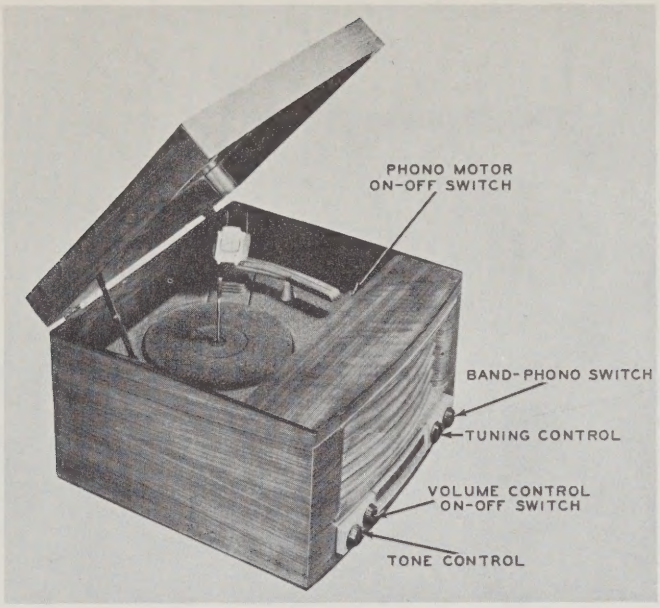
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

478-1

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ADMIRAL
CHASSIS MODEL 7B1 (MODEL 6RT44)



ADMIRAL MODEL 6RT44

TRADE NAME	Admiral, Chassis Model 7B1 (Model 6RT44)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago, Ill.
TYPE SET	AC Operated Phono - Radio Combination Superheterodyne with Loop Antenna
TUBES (SEVEN)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7GT/G Det.-AVC, 6SQ7GT/G AF Amp., 6V6GT/G Power Output, 5Y3GT/G Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .560 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	531-1605KC — **SHORT WAVE** 8.9-12.5MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn slugs all the way in and set pointer 7/32" to right from dot on extreme left end of dial backplate. Next turn slugs out all the way. They should be 1-3/16" out of their coil forms. If there is any deviation adjust respective screws until this distance is correct. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) 6SA7. Low side to chassis.	455KC	BC	Slugs out completely.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output Then set pointer per pre-alignment instructions.
2	20MMFD.	High side to black lead on loop. Low side to chassis.	1605KC	"	"	"	A5,A6, A7.	Adjust for maximum output in order given.
3	20MMFD.	"	1300KC	"	Set right edge of dial pointer saddle to black dot next to figures 7B1 at right end of dial backplate.	"	A8,A9, A10.	"
4	400Ω	"	12.5MC	SW	Slugs out completely.	"	A11,A12 A13	"
5	400Ω	"	12MC	"	Same as in Step 3	"	A14,A15, A16.	"

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove six Phillips head screws holding loop antenna to cabinet.
3. Remove leads to loop antenna. Remove loop antenna.
4. Remove phono-motor plug from receptacle.
5. Remove phono-pickup plug from chassis.
6. Remove speaker plug from chassis.
7. Remove six Phillips head screws holding chassis board to cabinet.
8. Remove chassis from cabinet.
9. Remove four hex nuts holding speaker to cabinet. Remove speaker.
10. Remove four hex head screws holding mounting board to chassis. Remove mounting board.

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PARTS LIST AND DESCRIPTIONS

ADMIRAL CHASSIS MODEL 7B1 (MODEL 6RT44)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC	6SQ7GT/G	6SQ7GT/G	8Q	
5	AF Amp.	6SQ7GT/G	6SQ7GT/G	8Q	
6	Power Output	6V6GT/G	6V6GT/G	7AC	
7	Rectifier	5Y3GT/G	5Y3GT/G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	30	350	67C6-25	AEF64K4A	UP9DJ534†	FP346	DY-311	EL-330	■ Filter
B	30	350							▲ "
C	20	25							Cath. Bypass
9	.01	600	64B1-10	684-01	DT6S1	TP410	S-6-01	TC-11	Output Plate Bypass
10	.01	400	64B1-25	484-01	DT4S1	TP421	S-4-01	TC-11	Audio Coupling
11	.01	400	64B1-25	484-01	DT4S1	TP421	S-4-01	TC-11	" "
12	.02	400	64B1-24	484-02	DT4S2	TP423	S-4-02	TC-12	Tone Compensation
13	.1	400	64B1-20	484-.1	DT4P1	TP428	S-4-1	TC-1	AVC Filter
14	.05	400	64B1-22	484-05	DT4S5	TP426	S-4-05	TC-15	RF Screen Bypass
15	100	500	65B7-17	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Audio Plate Bypass
16	1000	300	65B7-33	1468-001	1W5D1	MC455	MW.5-21	1FM-21	Tone Compensation
17	100	500	65B7-17	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Diode Filter
18	250	500	65B7-22	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	" "
19	65	500	65B1-27						Fixed Trimmer
20	200	500	65B1-14	1469-0002	5R5T2	MCB237	MOS.5-32	MS-32	Osc. Feedback
21	1200	300	65B5-34						" "
22	50	500	65B5-11	1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	Osc. Grid Capacitor
23	65	500	65B1-27						Fixed Trimmer
24	420	500	65B1-13						" "
25	20	500	65B7-5		5W5Q2		MOS.5-42	1FM-42	RF Coupling
26	100	500	65B7-17	1468-0001	5W5T1	MC235	MO.5-31	1FM-41	" "
27	25	500	65B1-28	1468-000025	5W5Q25	MC220	MO.5-425	1FM-425	Fixed Trimmer
28	1000	300	65B7-33	1468-001	1W5D1	MC455	MW.5-21	1FM-21	Ext. Ant. Isolation
29	140	500	65B1-26						Fixed Trimmer
30	20	500	65B7-5		5W5Q2		MOS.5-42	1FM-42	Osc. Feeback

†Do not use 10 MFD. section.

CONTROLS

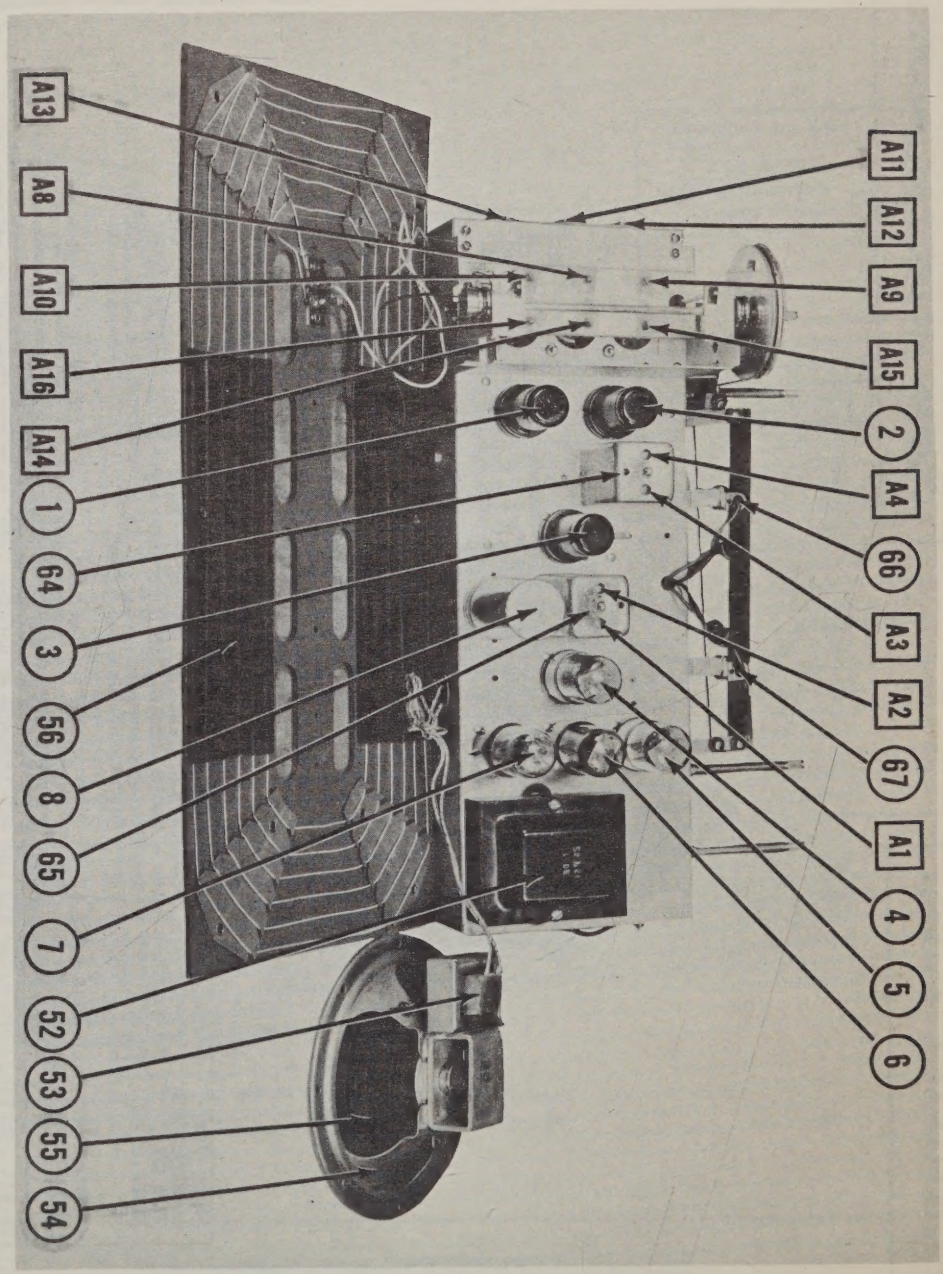
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
31A	1 Meg.	1	75B2-1	TM243	D18-137XX*	AT-112	Volume Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 31A per instructions
C	Switch		"	M26	41	SW-A	" " " "
32A	2 Meg.	1	75B1-5	MK403	D13-139	AM-66-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 32A per instructions

*Use 500KΩ tap only.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
33	100KΩ	½	60B8-104	BTS-100K	Br.-Blk.-Yl. Series Phono
34	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. RF Grid
35	10KΩ	2	60B20-103	BT-2-10K	Br.-Blk.-Or. RF Plate Load
36	22KΩ	½	60B8-223	BTS-22K	Red-Red-Or. Oscillator Grid
37	10 Meg.	½	60B8-106	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
38	100Ω	½	60B8-101	BW-½-100	Br.-Blk.-Br. Converter Cathode
39	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
40	100Ω	½	60B8-101	BW-½-100	Br.-Blk.-Br. IF Cathode
41	47KΩ	½	60B8-473	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
42	270KΩ	½	60B8-274	BTS-270K	Red-Vi.-Yl. Diode Load
43	150KΩ	½	60B8-154	BTS-150K	Br.-Grn.-Yl. Screen Dropping (Phono)
44	12KΩ	5	61A1-1	AB-12000	Voltage Dropping
45	27KΩ	½	60B8-273	BTS-27K	Red-Vi.-Or. Tone Compensation
46	10 Meg.	½	60B8-106	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
47	270KΩ	½	60B8-274	BTS-270K	Red-Vi.-Yl. AF Plate Load
48	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. Feedback
49	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. Output Grid
50	390Ω	1	60B14-391	BW-1-390	Or.-White-Br. Output Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: ADMIRAL PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	INSTALLATION NOTES
51	.076A	150Ω	2 Henries	74A3	C-2303‡		‡Drill one new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: UTAH PART No.
52	117V AC @ .56A	600V CT @ .076A	5.0V AC @ 1.8A	6.4V AC @ 2.3A	80B1	P-6312#	T22R04#	#Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
53	5500Ω	2.9Ω	320Ω	1.1Ω	98B6-1	A-3823	T22S46‡		‡Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
	FIELD	VC IMP.		ST-108		
54	PM	2.9Ω	78B7	Mod. P6-X		
	CONE DIA.	VC DIA.				
55	6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: MEISSNER PART No.
56	Loop Ant.		.3Ω	AC104	
57	BC Ant. Coil		9.5Ω	AB100-2	
58	SW Ant. Coil	0Ω	.2Ω	AD116-1	
59	BC RF Coil		4.5Ω	AB100-1	
60	SW RF Coil		.2Ω	AD116-2	
61	BC Osc. Coil		8Ω	AC101-1	
62	SW " "	0Ω	.2Ω	AD116-3	
63	Osc. Cathode Choke Coil		16Ω	AB103-1	
64	Input IF	22Ω	22Ω	72B7	16-6658
65	Output IF	22.5Ω	22Ω	72B8	16-6660

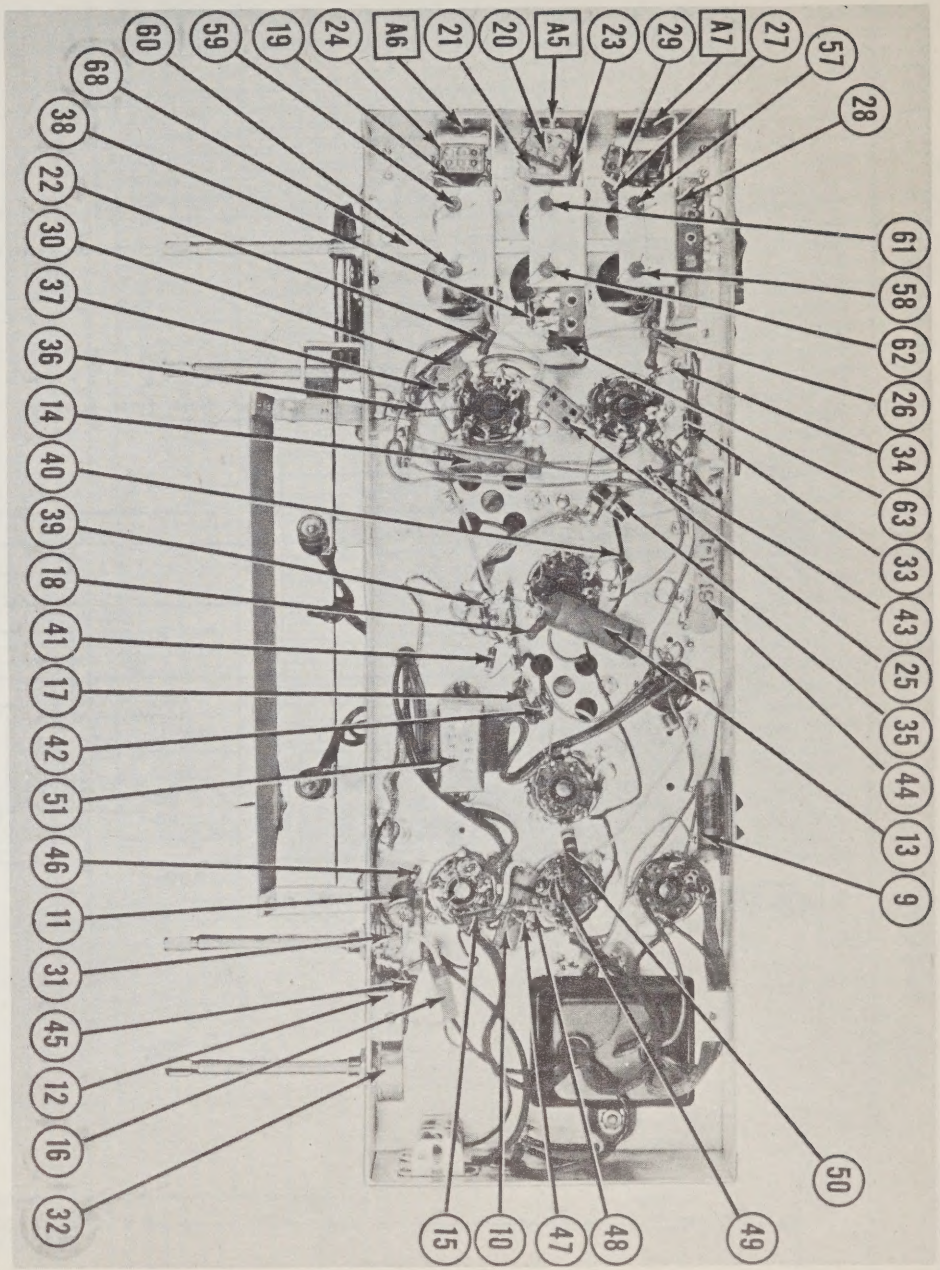
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
66	Bayonet	6-8	0.15	Brown	81A1-8		Type 47
67	"	"	"	"	"		"

MISCELLANEOUS

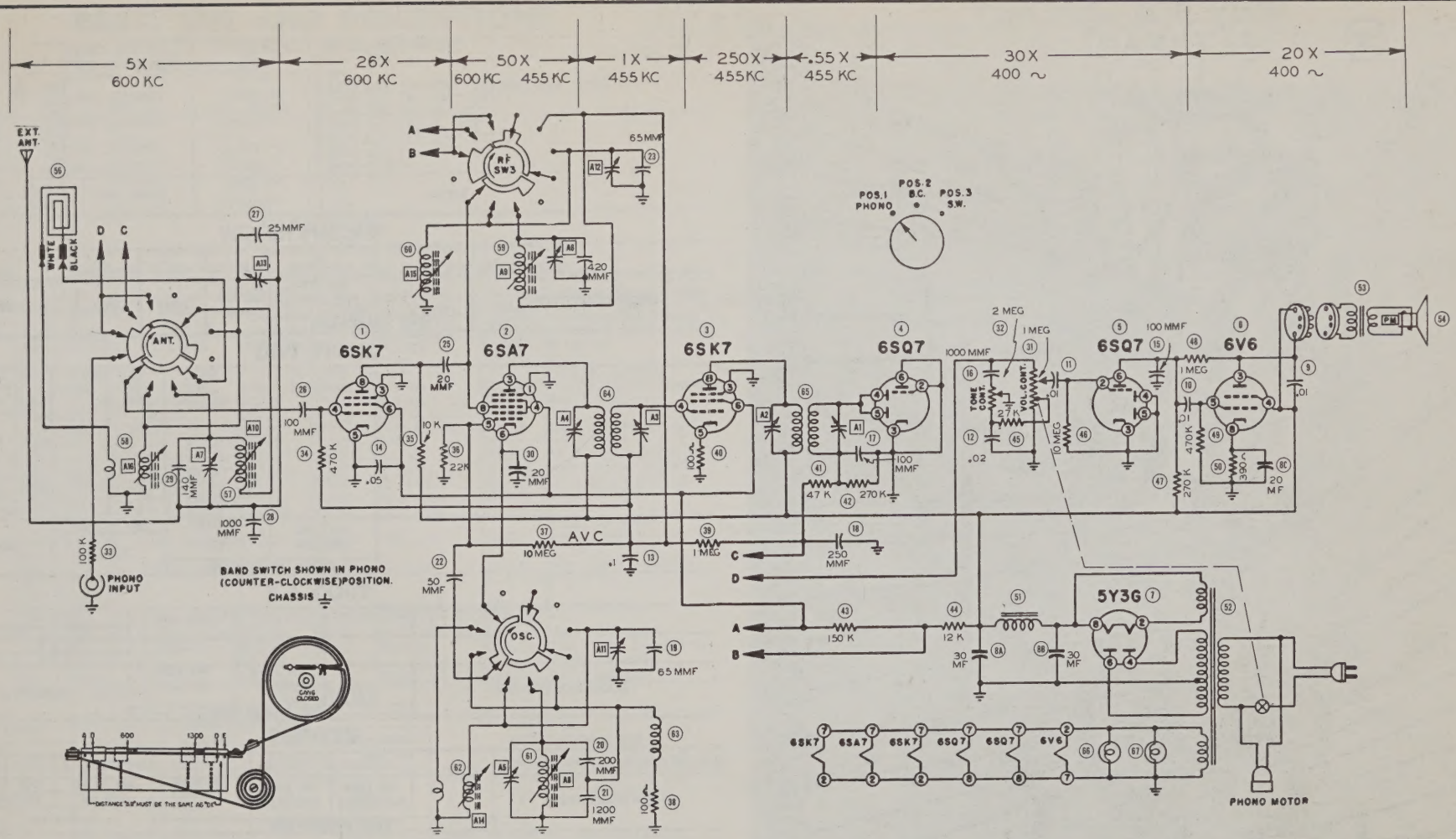
ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
68	Switch	76B1	Band-Phono
A5 } A11	Dual Trimmer	66A1-5	3-40 MMF (BC Osc. Adj.) 3-40 MMF (SW Osc. Adj.)
A6 } A12	Dual Trimmer	66A1-5	3-40 MMF (BC RF Adj.) 3-40 MMF (SW RF Adj.)
A7 } A13	Dual Trimmer	66A1-5	3-40 MMF (BC Ant. Adj.) 3-40 MMF (SW Ant. Adj.)
	Pointer	25A3	
	XTAL Cartridge	409A1	
	Phono Motor	407B3	Also 407B1, 407B2

CHASSIS—BOTTOM VIEW



ADMIRAL CHASSIS MODEL 7B1 (MODEL 6RT44)

ADMIRAL CHASSIS MODEL 7B1 (MODEL 6RT44)



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0 V.	0 V.	0 V.	-27 V. DC	0 V.	92 V. DC	6.4 V. AC	170 V. DC
2	6SA7	0 V.	0 V.	300 V. DC	92 V. DC	0 V.	1.4 V. DC	6.4 V. AC	-.1 V. DC
3	6SK7	0 V.	0 V.	-1 V. DC	-1.25 V. DC	92 V. DC	6.4 V. AC	295 V. DC	
4	6SQ7GT/G	0 V.	0 V.	0 V.	-3 V. DC	-3 V. DC	0 V.	6.4 V. AC	0 V.
5	6SQ7GT/G	0 V.	-7.5 V. DC	0 V.	0 V.	0 V.	113 V. DC	6.4 V. AC	0 V.
6	6V6GT/G	0 V.	6.4 V. AC	280 V. DC	295 V. DC	0 V.	0 V.	0 V.	1.8 V. DC
7	5Y3GT/G	0 V.	300 V. DC	0 V.	280 V. AC	0 V.	280 V. AC	0 V.	300 V. DC

IF=455KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0 Ω	0 Ω	0 Ω	1.4 MEG.	0 Ω	210 KΩ	.1 Ω	210 KΩ
2	6SA7	0 Ω	0 Ω	200 KΩ	210 KΩ	2.2 KΩ	110 Ω	.1 Ω	1 MEG.
3	6SK7	0 Ω	0 Ω	0 Ω	1 MEG.	90 Ω	210 KΩ	.1 Ω	200 KΩ
4	6SQ7GT/G	0 Ω	0 Ω	0 Ω	190 KΩ	190 KΩ	0 Ω	.1 Ω	0 Ω
5	6SQ7GT/G	0 Ω	10 MEG.	0 Ω	0 Ω	0 Ω	450 KΩ	.1 Ω	0 Ω
6	6V6GT/G	INF.	.1 Ω	200K Ω	200K Ω	440 KΩ	INF.	0 Ω	250 Ω
7	5Y3GT/G	INF.	200 KΩ	INF.	180 Ω	INF.	165 Ω	INF.	200 KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

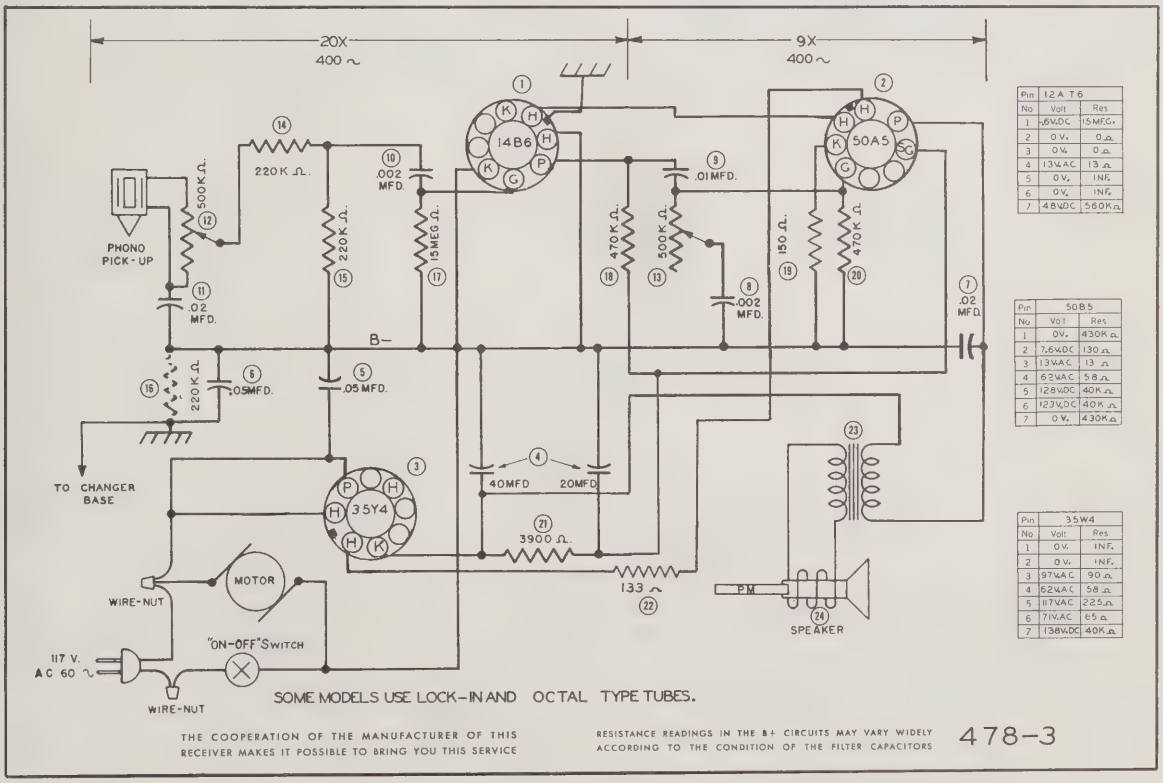
478-2

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIRCASTLE MODEL 626

TRADE NAME	Aircastle, Model 626
SUPPLIER	Spiegel, Inc., 1061 W. 35th St., Chicago, Ill.
TYPE SET	AC Operated Record Player with 3 Tube Amplifier & Speaker
TUBES (THREE)	Types, 12SQ7GT AF Amp., 50L6GT Power Output, 35Z5GT Rectifier (or Lock-In or Miniature Equivalents)
POWER SUPPLY	110-120 Volts AC RATING .255 Amp. @ 117 Volts AC



Pin No	12AT6 Volt	Res
1	-6 V DC	15 MEG.
2	0 V.	0 Ω.
3	0 V.	0 Ω.
4	13 V AC	13 Ω.
5	0 V.	INF.
6	0 V.	INF.
7	48 V DC	560 K Ω.

Pin No	50B5 Volt	Res
1	0 V.	430 K Ω.
2	7.6 V DC	130 Ω.
3	13 V AC	13 Ω.
4	62 V AC	58 Ω.
5	128 V DC	40 K Ω.
6	123 V DC	40 K Ω.
7	0 V.	430 K Ω.

Pin No	35W4 Volt	Res
1	0 V.	INF.
2	0 V.	INF.
3	97 V AC	90 Ω.
4	62 V AC	58 Ω.
5	117 V AC	225 Ω.
6	71 V AC	65 Ω.
7	138 V DC	40 K Ω.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1A	AF Amp.	12SQ7GT	12SQ7GT	8N	Octal
B	AF Amp.	14B6	14B6	8W	Lock-In
C	AF Amp.	12AT6	12AT6	7BT	Minature
2A	Power Output	50L6GT	50L6GT	7AC	
B	Power Output	50A5	50A5	6AA	
C	Power Output	50B5	50B5	7BZ	
3A	Rectifier	35Z5GT	35Z5GT	6AD	
B	Rectifier	35Y4	35Y4	5AL	
C	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	40	150	B-9564-1	PRSA150-40-40	BRL4215	2N514	M-40+20-150	TA-240	Filter - Red
B	20	150							" - Blue
5	.05	400	BC31B503	484-05	DT4S5	TP426	S-4-05	TC-15	Line Filter
6	.1	400	BD410104	484-.1	DT4P1	TP428	S-4-1	TC-1	Line Isolation
7	.02	400	BD410203	484-02	DT4S2	TP423	S-4-02	TC-12	50L6 Plate Bypass
8	.002	600	BD610202	684-002	DT6D2	TP405	S-6-002	TC-22	Tone Compensation
9	.01	400	BD410103	484-01	DT4S1	TP421	S-4-01	TC-11	Audio Coupling
10	.002	600	BD610202	684-002	DT6D2	TP405	S-6-002	TC-22	"
11	.02	400	BD410203	484-02	DT4S2	TP423	S-4-02	TC-12	Phono Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
12A	500KΩ	1	B9051-1	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 12A per instructions
13A	500KΩ	1	B9051-1	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 13A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES
14	220KΩ	½	BR17B224	BTS-220K	Red-Red-Yl. Phono Input Voltage Divider
15	220KΩ	½	BR17B224	BTS-220K	Red-Red-Yl. " " "
16	220KΩ	½	BR17B224	BTS-220K	Red-Red-Yl. Line Isolating
17	15 Meg.	½	BR17B156	BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid
18	470KΩ	½	BR17B474	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
19	150Ω	1	BR16E151	BW-1-150	Br.-Grn.-Br. Output Cathode
20	470KΩ	½	BR17B474	BTS-470K	Yl.-Vi.-Yl. Output Grid
21	3900Ω	½	BR16C392	BTS-3900	Or.-White-Red Filter-See Note 1
22	133	5	A-9528	AB-150	Line Dropping

Note 1-Some models use a 1000Ω resistor in this application.

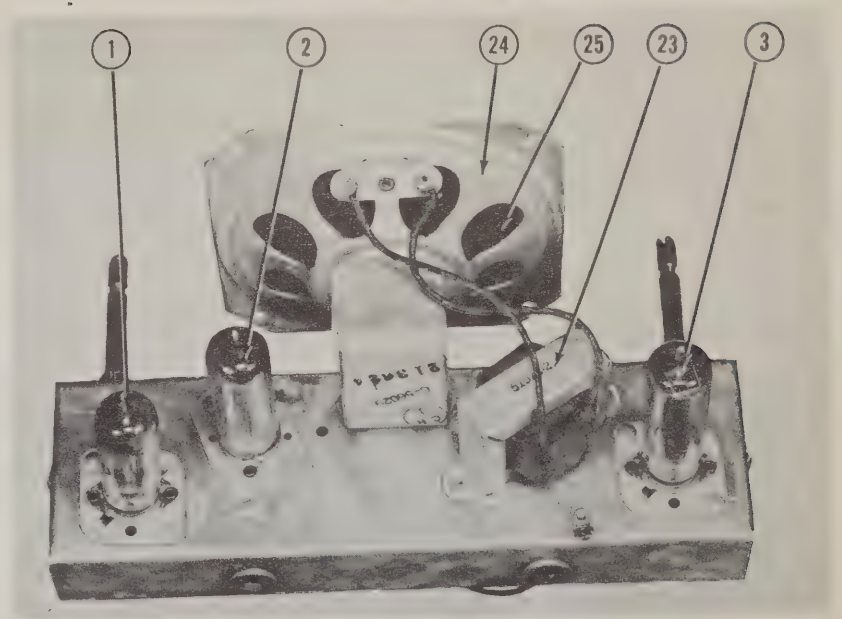
TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
23	2500Ω	3.4Ω	180Ω	.8Ω	B-51578-2	A-3876	T22S45		

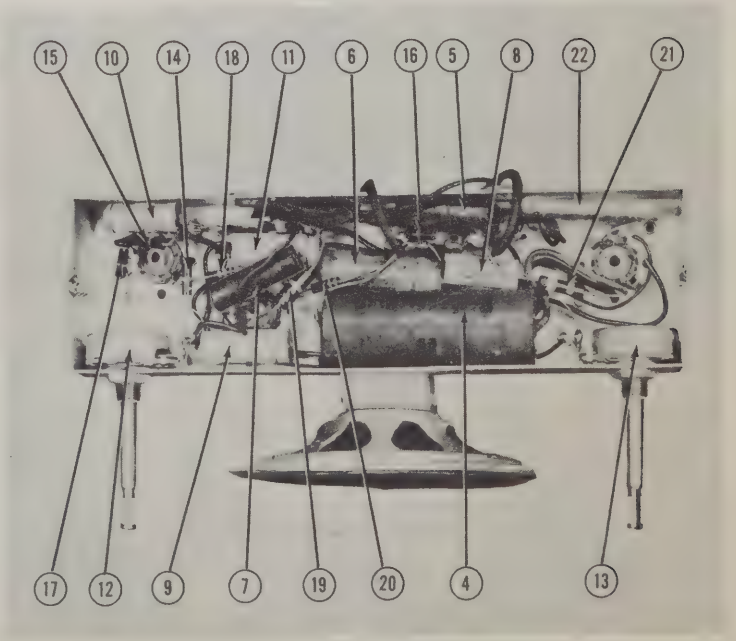
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIRCASTLE PART No.	JENSEN PART No.		INSTALLATION NOTES
24	FIELD PM	VC IMP. 3.4Ω	C- 56029	ST-113† Mod. P4-X		†Case must be drilled and tapped.
25	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

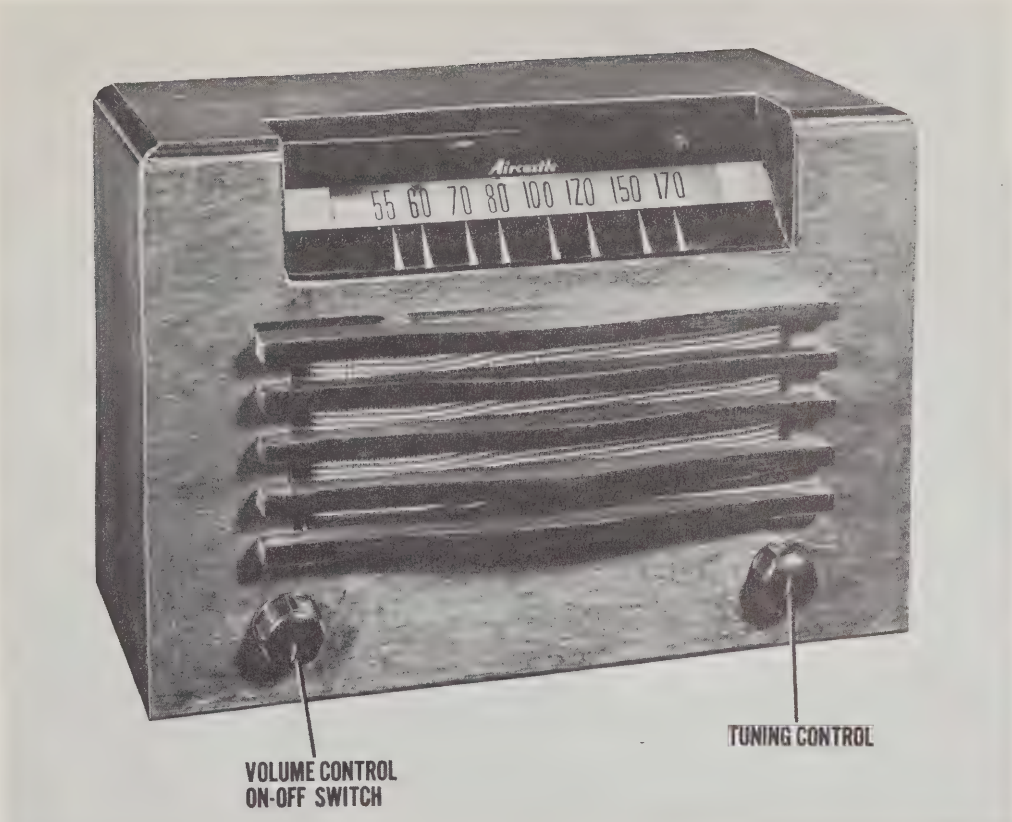
CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



AIRCASTLE
MODEL 6514



AIRCASTLE
MODEL 6514

AIRCASTLE MODEL 6514

TRADE NAME	Aircastle, Model 6514
SUPPLIER	Spiegel, Inc., 1061 W. 35th St., Chicago, Ill.
TYPE SET	AC-DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types, 14Q7 Converter, 14A7/12B7 IF Amp., 14B6 Det.-AVC-AF, 50A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1700KC RATING .235 Amps. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and B-. Set volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01 MFD.	High side to stator of rear section of variable. Low side to B-.	455KC	Quiet point at high freq. end of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
100 MMF.	High side to ant. lead. Low side to chassis.	1720KC	High freq.end (Fully clockwise)	"	A5	" " " "
100 MMF.	"	1500KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		AIRCASTLE PART No.	STANDARD REPLACEMENT		
1	Converter	14Q7	14Q7	8AL	
2	IF Amp.	14A7/12B7	14A7/12B7	8V	
3	Det.-AVC-AF	14B6	14B6	8W	
4	Power Output	50A5	50A5	6AA	
5	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	AIRCASTLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	
6A	30	150		PRSA150-40-40	BRD3315	2N513	M-2x30-150	TA-330	Filter
B	30	150							"
7	.05	400		484-05	DT4S5	TP426	S-4-05	TC-15	Line Filter
8	.02	400		484-02	DT4S2	TP423	S-4-02	TC-12	Output Plate Bypass
9	.02	400		484-02	DT4S2	TP423	S-4-02	TC-12	Audio Coupling
10	.005	600		684-005	DT6D5	TP408	S-6-005	TC-25	" "
11	.005	600		684-005	DT6D5	TP408	S-6-005	TC-25	AVC Filter
12	.25	200		484-.25	DT4P25	TP430	S-4-25	TC-2	Line Isolation
13	.002	600		684-002	DT6D2	TP405	S-6-002	TC-22	Ant. Coupling
14	250	500		1468-00025	SW5T25	MC240	MO.5-325	1FM-325	Audio Plate Bypass
15	250	500		1468-00025	SW5T25	MC240	MO.5-325	1FM-325	IF Bypass Vol. Cont.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	AIRCASTLE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
16A	500KΩ	1	A-9.066	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 16A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

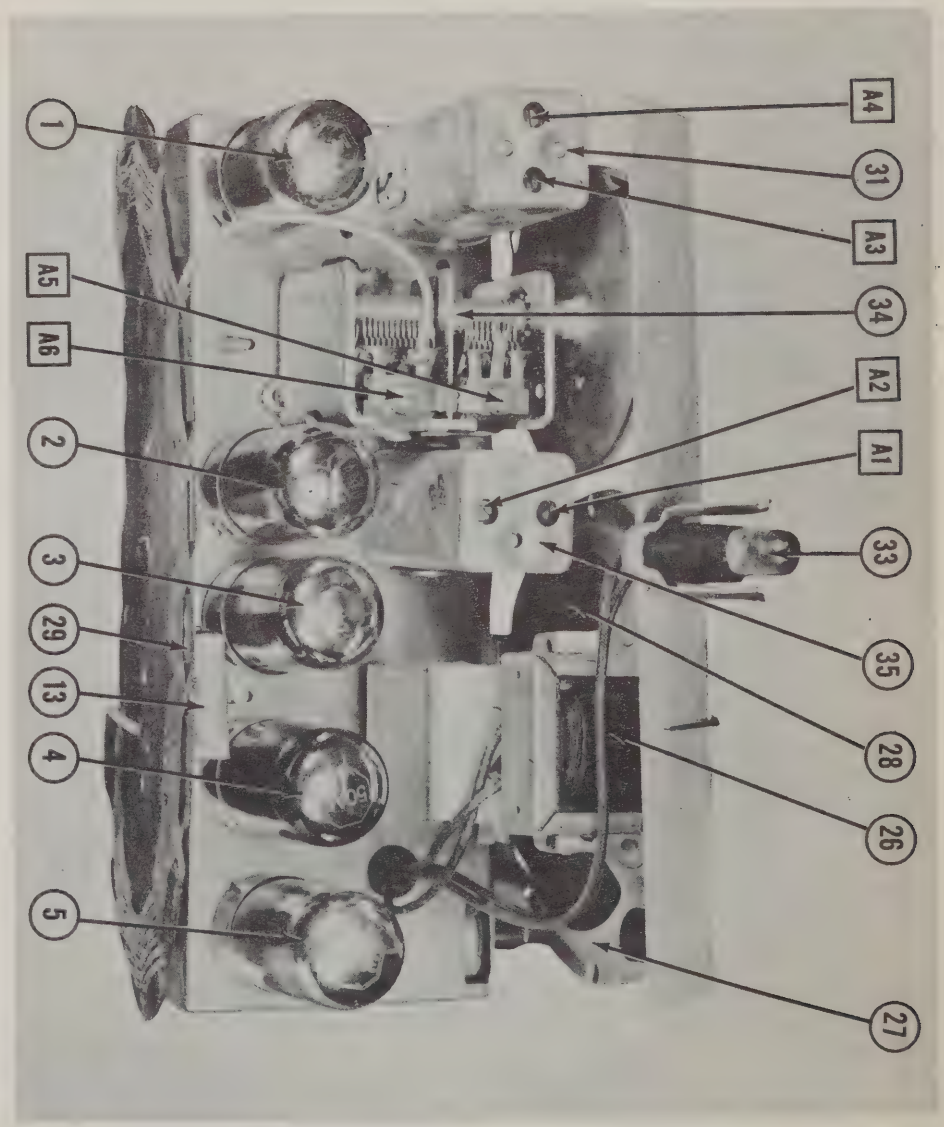
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	
17	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
18	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AVC Network
19	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
20	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid ‡
21	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
22	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
23	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
24	220KΩ	½		BTS-220K	Red-Red-Yl. Line Isolation
25	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter

‡ Some models may use 15 Meg. ½ W. resistor for this application.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
26	1700Ω	3.3Ω	155Ω	.5Ω	Part of B-11.037	A-3876	T22S45		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIRCASTLE PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
27	PM	3.3Ω	B-11.037	Mod. P5-X		
	CONE DIA.	VC DIA.				
28	4-5/8"	9/16"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

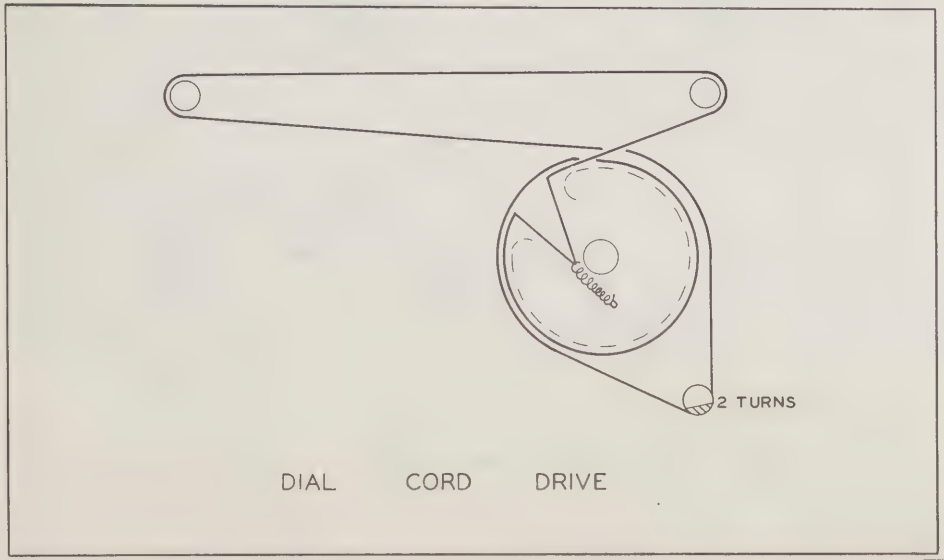
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	MEISSNER PART No.	
29	Loop Ant.	0Ω	1.3Ω	B5.006		
30	Osc. Coil	.8Ω	6.2Ω	B2.192	14-1040*	*Add 50 MMFD cap. from grid to high side tuning cap.
31	Input IF	21.5Ω	21Ω	C2.191-1	16-6666	
32	Output IF	14.2Ω	14.5Ω	C2.191-2	16-6667	

DIAL LIGHT

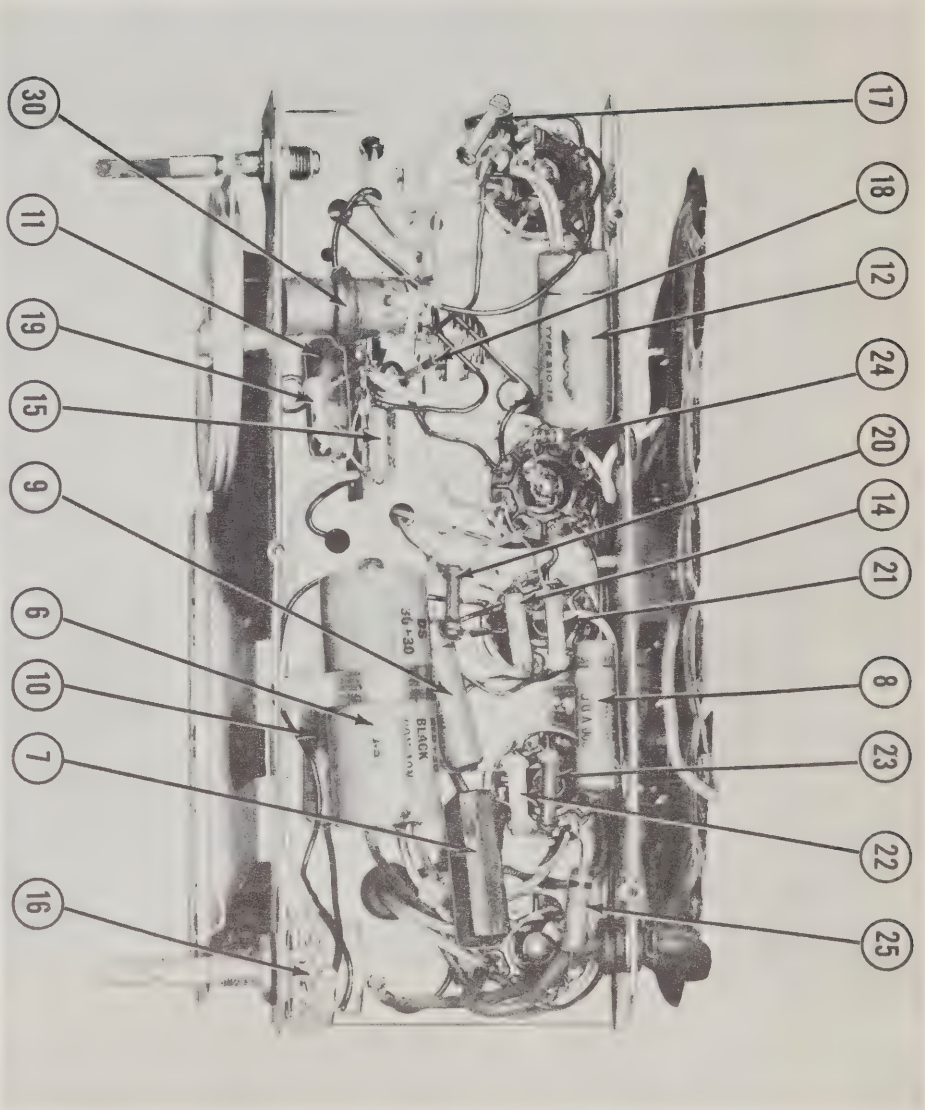
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIRCASTLE PART No.		INSTALLATION NOTES
33	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

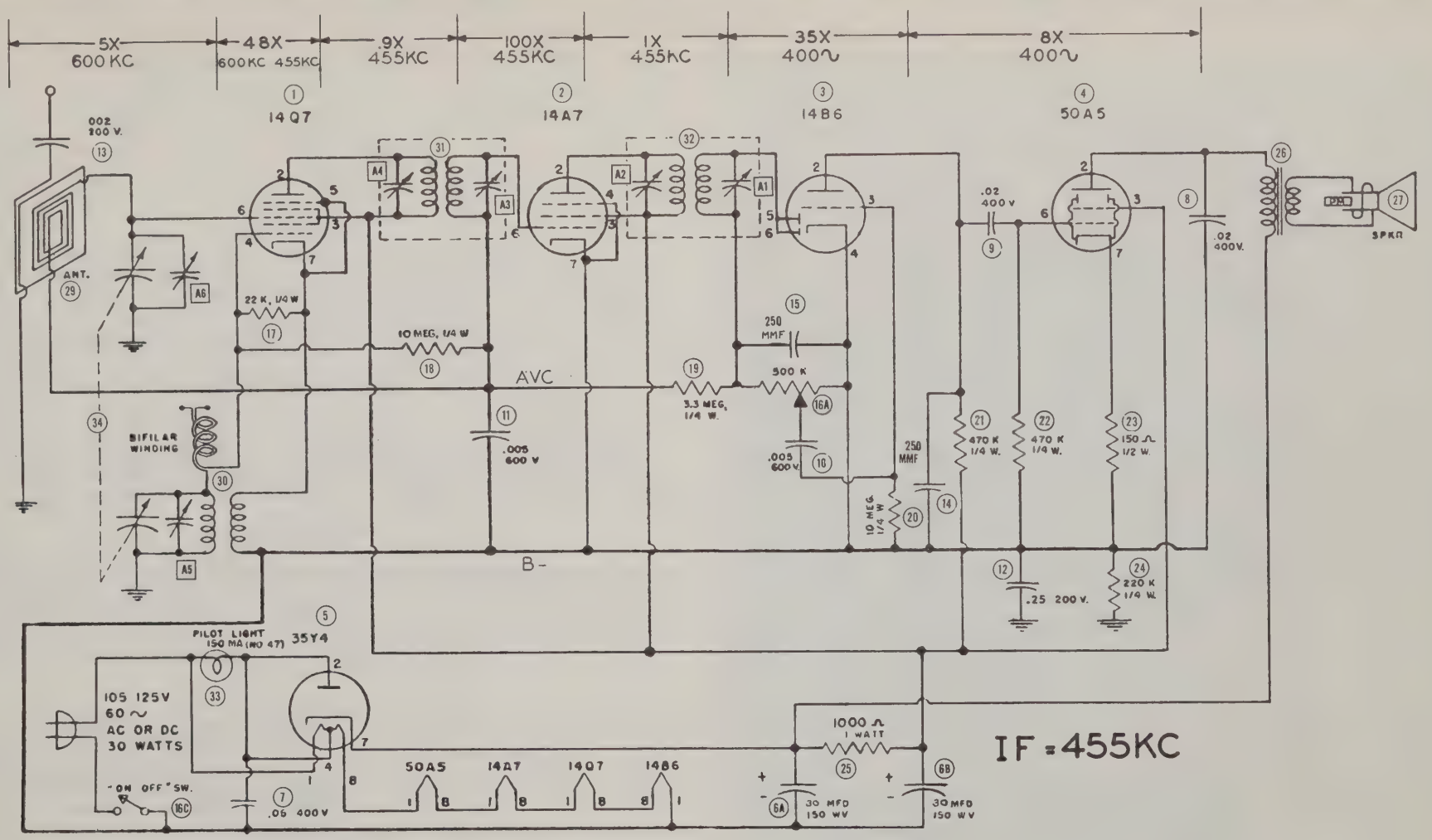
ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
34	Tuning Cap.	C6.032	2 Gang Variable Cap.



CHASSIS—BOTTOM VIEW



AIRCASTLE
MODEL 6514



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	25.5V.AC	90 V. DC	90 V. DC	-4.4V.DC	0V.	-4.5V.DC	0V.	13 V.AC
2	14A7	37.5V.AC	90V. DC	90V. DC	0V.	0V.	-.45V.DC	0V.	25.5V.AC
3	14B6	0V.	53V. DC	-.5V. DC	0V.	-.65V.DC	-.65V DC	0V.	13V.AC
4	50A5	87V.AC	105V. DC	90V.DC	0V.	0V.	0V.	5.9V. DC	37.5V.AC
5	35Y4	117V.AC	113V.AC	0V.	113V.AC	0V.	0V	110V.DC	87V.AC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	24 Ω	45 KΩ	45KΩ	21KΩ	.5 Ω	2.5MEG	.5Ω	12 Ω
2	14A7	35 Ω	45KΩ	45KΩ	0Ω	230KΩ	2.5MEG	0Ω	24Ω
3	14B6	0Ω	515KΩ	10MEG.	0Ω	380KΩ	380KΩ	0Ω	12Ω
4	50A5	82Ω	45KΩ	45KΩ	0Ω	0Ω	440KΩ	140Ω	35Ω
5	35Y4	113Ω	110Ω	INF.	110Ω	INF.	INF.	45KΩ	82Ω

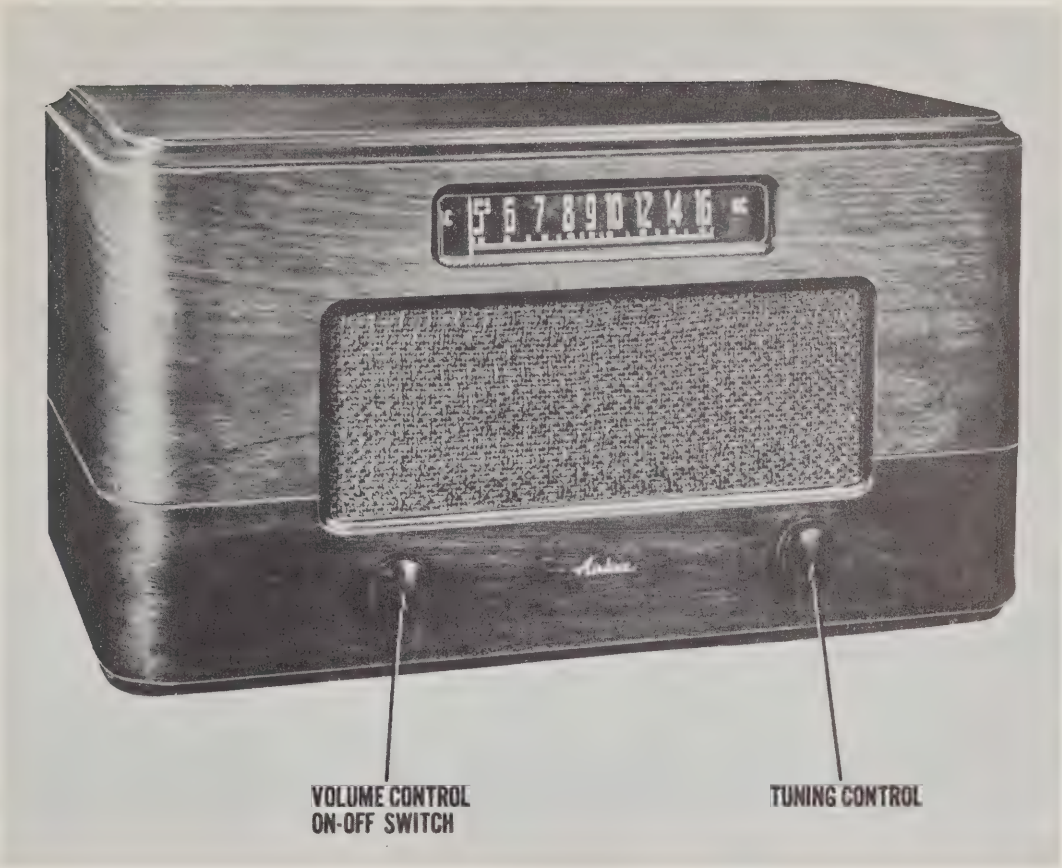
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

478-4

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIRLINE
MODELS 64 WG-1207 B, 74 WG-1207 B
(BATTERY OPERATED)



AIRLINE
MODELS 64 WG-1207 B, 74 WG-1207 B
(BATTERY OPERATED)

AIRLINE MODEL 64WG-1207B

TRADE NAME	Airline, Models 64WG-1207B, 74WG-1207B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	Battery Operated Superheterodyne Receiver
TUBES (FIVE)	Types, 1R5 Converter, 1U4 1st IF Amp., 1U4 2nd IF Amp., 1S5 Det.-AVC-AF, 3Q4 Power Output.
POWER SUPPLY RATING	1½ Volt "A" Battery & 90 Volt "B" Battery in Pack Form 220MA @ 1.5 Volts DC & 14 MA @ 89 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	.1 MFD.	"	1620KC	"	"	A5	" " " "
3	50 MMFD	High side to ext. ant. lead. Low side to ext. ground lead.	1400KC	Tune for maximum output.	"	A6	" " " "

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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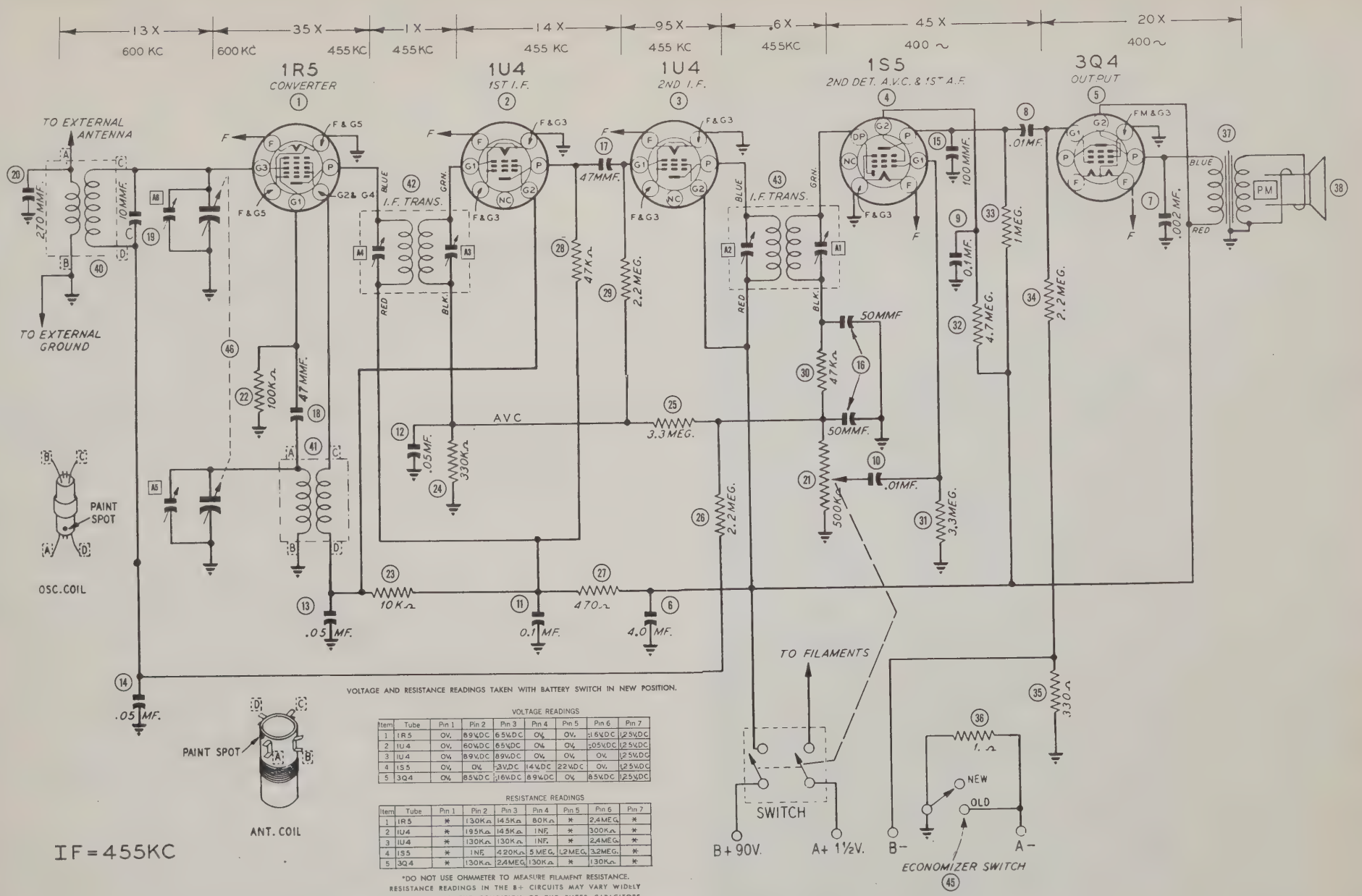


VOLTAGE AND RESISTANCE READINGS TAKEN WITH BATTERY SWITCH IN NEW POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0V.	89V.DC	65V.DC	0V.	0V.	-1.6V.DC	1.25V.DC
2	1U4	0V.	60V.DC	65V.DC	0V.	0V.	-.05V.DC	1.25V.DC
3	1U4	0V.	89V.DC	89V.DC	0V.	0V.	0V.	1.25V.DC
4	1S5	0V.	0V.	-3V.DC	14V.DC	22V.DC	0V.	1.25V.DC
5	3Q4	0V.	85V.DC	-1.6V.DC	89V.DC	0V.	85V.DC	1.25V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	130KΩ	145KΩ	80KΩ	*	2.4MEG.	*
2	1U4	*	195KΩ	145KΩ	INF.	*	300KΩ	*
3	1U4	*	130KΩ	130KΩ	INF.	*	2.4MEG.	*
4	1S5	*	INF.	420KΩ	5 MEG.	1.2MEG.	3.2MEG.	*
5	3Q4	*	130KΩ	2.4MEG.	130KΩ	*	130KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

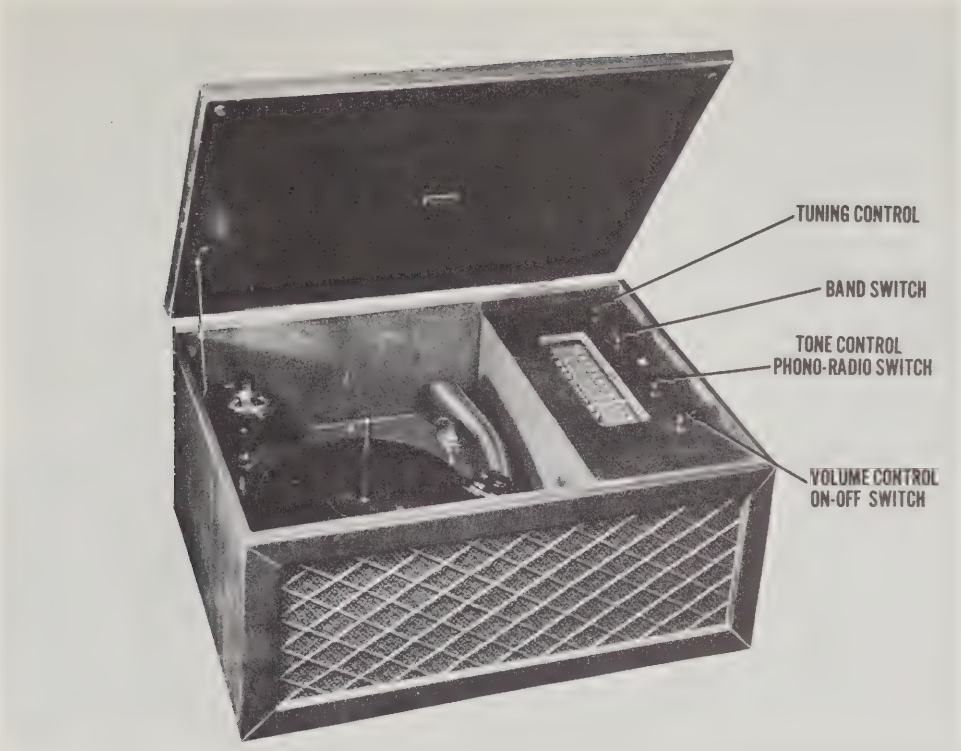
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

478-5

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. Volume control is shorted during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

AIRLINE
MODELS 64 WG-2010 B, 74 WG-2010 B



AIRLINE MODEL 74WG-2010B

TRADE NAME	Airline, Model 64WG-2010B, 74WG-2010B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne with Loop Antenna
TUBES (SIX)	Types, 6SA7 Converter, 6SK7 1st IF Amp. 6SF7 2nd IF Amp., 6SJ7 AF Amp., 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	105-125 Volts AC — RATING .380 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC — SHORT WAVE 9-15.5MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) of 6SA7. Low side to chassis.	455KC	BC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	100MMFD	High side to ant. lead. Low side to chassis.	1620KC	"	"	"	A5	" " " "
3	100MMFD	"	1400KC	"	Tune for maximum output.	"	A6	Adjust for maximum output. If pointer is not set on 1400, reset it and fasten securely.
4	100MMFD	"	600KC	"	"	"	A7	Rock tuning cap and adjust for maximum output. Repeat steps 2, 3 and 4 until no further increase in output is obtained.
5	400Ω	"	15.6MC	SW	Tuning cap. fully open.	"	A8	Adjust for maximum output.
6	400Ω	"	14MC	"	Tune for maximum output.	"	A9	Rock tuning cap and adjust for maximum output. Reassemble chassis in cabinet and set up as in Step 3. Adjust A6 for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		AIRLINE PART No.	STANDARD REPLACEMENT		
1	Converter	6SA7	6SA7	8R	
2	1st IF Amp.	6SK7	6SK7	8N	
3	2nd IF Amp.-Det.-AVC	6SF7	6SF7	7AZ	
4	AF Amp.	6SJ7	6SJ7	8N	
5	Power Output	6V6GT	6V6GT	7AC	
6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	
7A	40	450	45X346		UP9DJ53	FP346	DY-312	EL-330	● Filter
B	40	450						"	■ "
C	20	25							▲ Cath. Bypass
8	.004	600	F66402	684-004	DT6D4	TP407	S-6-004	TC-24	Output Plate Bypass
9	.01	400	D66103	484-01	DT4S1	TP421	S-4-01	TC-11	Audio Coupling
10	.004	400	D66402	484-004	DT6D4	TP407	S-6-004	TC-24	Tone Compensation
11	.025	400	D64253	484-025	DT4S25	TP451			Audio Plate Decoup.
12	.1	400	D67104	484-.1	DT4P1	TP428	S-4-1	TC-1	Audio Screen Bypass
13	.005	400	D66502	484-005	DT6D5	TP408	S-6-005	TC-25	Audio Coupling
14	.04	400	D64403	484-04	DT4S4	TP425	S-4-04	TC-14	Tone Compensation
15	.04	400	D64403	484-04	DT4S4	TP425	S-4-04	TC-14	Screen Bypass
16	.04	400	D64403	484-04	DT4S4	TP425	S-4-04	TC-14	AVC Filter
17	.04	400	D64403	484-04	DT4S4	TP425	S-4-04	TC-14	Conv. Screen Bypass
18	.0005	200	B66501	1468-0005	DT6T5	TP403	S-6-0005	TC-35	RF Coupling
19	.2	400		484-.2	DT4P2	TP429	S-4-2	TC-2	RF Bypass Pwr. Supp.*
20	470	500	47X505	1468-0005	5W5T5	MC245	M0.5-347	1FM-35	Audio Plate Bypass
21	100	500	47X476	1468-0001	5W5T1	MC235	M0.5-31	1FM-31	Diode Filter
22	68	500	47X471	1469-00007	5W5Q7	MC230	M0.5-47	MS-47	" "
23	47	500	47X463	1468-00005	5W5Q5	MC225	M0.5-447	1FM-45	Tone Compensation
24	47	500	47X463	1468-00005	5W5Q5	MC225	M0.5-447	1FM-45	IF Coupling
25	68	500	47X466	1469-00007	5W5Q7	MC230	M0.5-47	MS-47	Osc. Grid Capacitor
26	286	500	47X481						Fixed Padder
27	40	500	47X472	1469-00004	5R5Q4	MCB223	M0S.5-44	MS-44	Fixed Trimmer
28	360	500	47X474						Fixed Padder
29	47	500	47X473	1469-00005	5R5Q5	MCB225	M0S.5-447	MS-45	Fixed Trimmer
30	270	500	47X445	1468-0003	5W5T3	MC241	M0.5-327	MS-33	Ant. Pri. Shunt

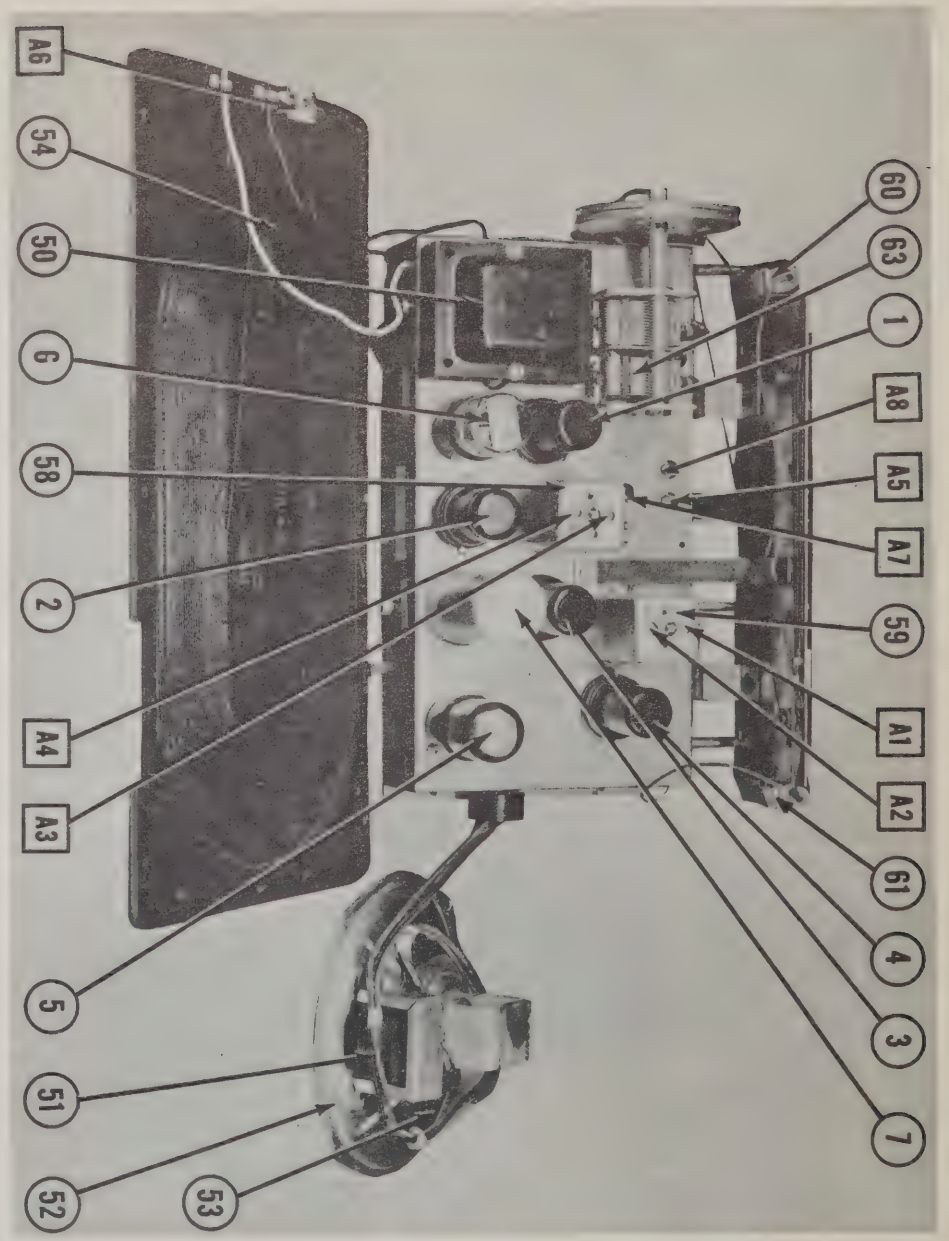
*Not used in all models.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
31A	500K	1	36X358	TM227	D13-133X	T-78	Volume Control
B	Shaft		Not Req.	S825	E	KSS-3	Attach to 31A per instructions
C	Switch		" "	M26	41	SW-A	" " " "
32	3 Meg.	1	40X276				Tone Control & Radio Phono Sw.
32A	3 Meg.	1	40X281	UM165	D13-140	AM-67-Z	Tone Control - See Note 1
B	Shaft		25X1539 †	S825	E	KSS-3	Attach to 32A per instructions
C	Switch		2A161	None	None	None	Radio Phono Switch

†Radio phono switch lever.
#This control has radio phono switch on rear of control.
Note 1 - This control has radio phono switch independent of control and is actuated by a lever attached to control shaft.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	
33	2.2 Meg.	½	B85225	BTS-2.2 Meg.	Red-Red-Grn. Converter Grid
34	39KΩ	1	C84393	BTA-39K	Or.-White-Or. Converter Screen Dropping
35	39KΩ	½	B84393	BTS-39K	Or.-White-Or. Oscillator Grid
36	39KΩ	1	C84393	BTA-39K	Or.-White-Or. IF Screen Dropping
37	2200Ω	½	B84222	BTS-2200	Red-Red-Red 1st IF Plate Load
38	1 Meg.	½	B85105	BTS-1 Meg.	Br.-Blk.-Grn. 2nd IF Grid
39	2.2 Meg.	½	B85225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
40	47KΩ	½	B85473	BTS-47K	Yl.-Vl.-Or. Diode RF Filter
41	15KΩ	½	B84153	BTS-15K	Br.-Grn.-Or. Tone Compensation
42	10 Meg.	½	B85106	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
43	470KΩ	½	B85474	BTS-470K	Yl.-Vl.-Yl. AF Screen Dropping
44	33KΩ	½	B84333	BTS-33K	Or.-Or.-Or. AF Plate Load
45	82KΩ	½	B84823	BTS-82K	Gray-Red-Or. AF Plate Decoupling
46	470KΩ	½	B85474	BTS-470K	Yl.-Vl.-Yl. Output Grid
47	270Ω	1	C84271	BW-1-270	Red-Vl.-Br. Output Cathode
48	1800Ω	2	D84182	BT-2-1800	Br.-Gray-Red Filter
49	2Ω	½	43X213	BW-½-2.2	Series Pilot Light

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRLINE PART No.	STANCOR PART No.	THORDARSON PART No.	
50	117V AC @ .38A	500V CT @ .06A	6.3V AC @ 2.5A		53X282			

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
51A	6600Ω	3.7Ω	530Ω	1.25Ω	Part of 12A442	A-3823	T22847 ‡		‡ Drill one new mounting hole.
B					Part of 12A459				Alternate transformer

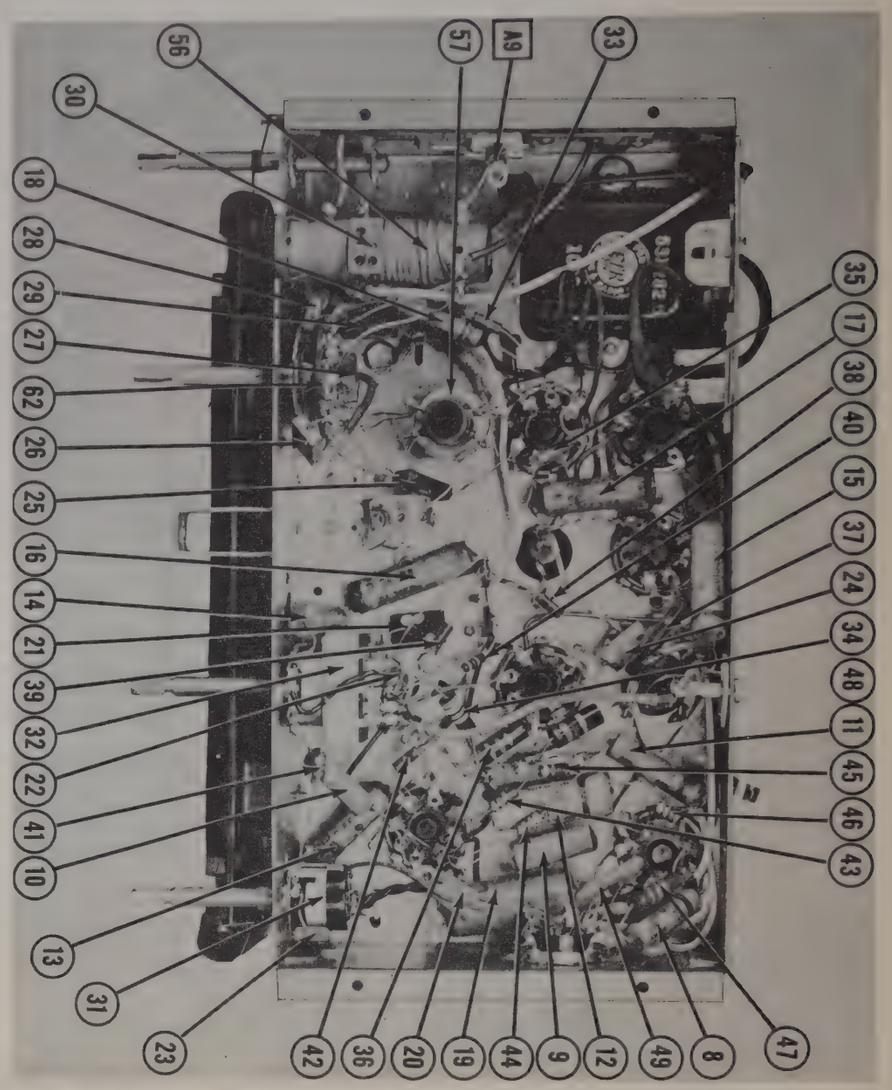
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	AIRLINE PART No.	JENSEN PART No.		
52A	PM	3.7Ω	12A442	ST-110		
B			12A459	Mod. P6-V		Alternate Speaker
	CONE DIA.	VC DIA.				
53	6"	7/8"	ORDER FROM MANUFACTURER.			Specify Part Number and letters stamped on speaker.

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	
54	Loop Ant.	.4Ω	3Ω	9A1816		
55	SW Ant.Plate					
56	SW Ant.Coil	1.3Ω	0Ω	9A1812	14-1044	
57A	BC Osc.Coil	1Ω	1.8Ω	9A1813		57A & 57B wound on same form
B	SW " "		0Ω			
58	Input IF	21Ω	21Ω	9A1814	16-6658	
59	Output IF	20Ω	18Ω	9A1815	16-6660	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

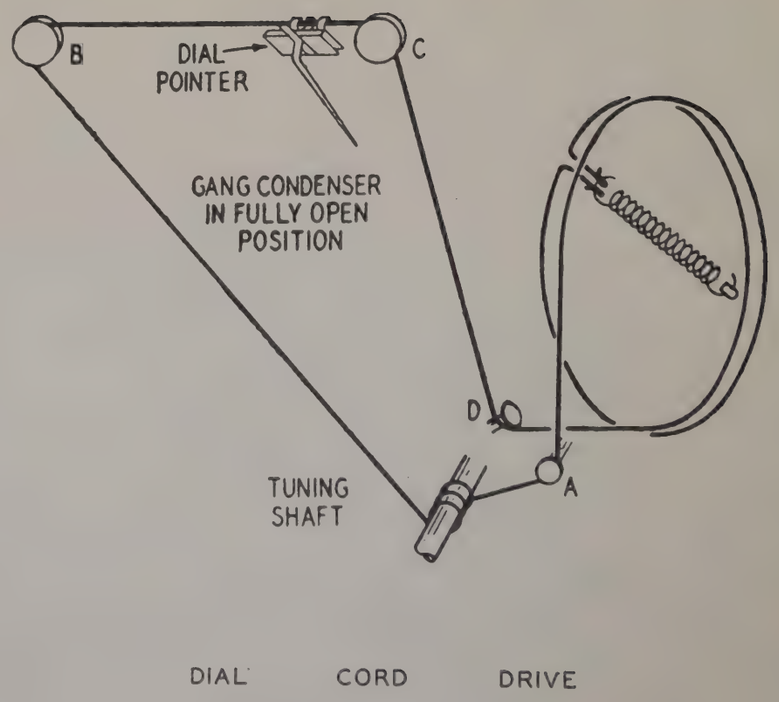
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIRLINE PART No.		
60	Bayonet	6.3	0.15	Brown			Type 47
61	"	"	"	"			"

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
62	Bandswitch	2A359	
63	2 Gang Var. Cap	14A178	16-482 MMF, 14-408 MMF
A5	Dual Trimmer	17A109	BC Osc. (2.5-35MMF)
A8			SW Osc. (2.5-35MMF)
A6	Trimmer	17A123	BC Ant. (1.5-12 MMF)
A7	"	17A155	BC Osc. Padder (350-430MMF)
A9	"	17A164	SW Ant. (5-50 MMF)
	Pointer	15X150	

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove six wood screws holding loop antenna to back of cabinet. Remove loop antenna.
3. Remove three leads to loop antenna.
4. Remove one Phillips head screw from top of cabinet.
5. Remove speaker plug from chassis.
6. Remove phono-pickup plug from chassis.
7. Remove phono-motor plug.
8. Remove shield lead from chassis.
9. Remove two wood screws holding chassis to cabinet. Remove chassis.
10. Remove four hex nuts from speaker. Remove speaker.



DIAL CORD DRIVE

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

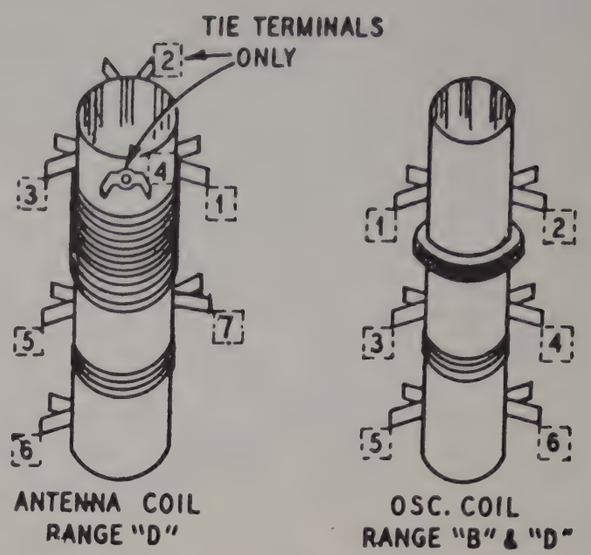
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0V.	0V.	225V.DC	65V.DC	3.9V.DC	0V.	6.3V.AC	±25V.DC
2	6SK7	0V.	0V.	0V.	±22V.DC	0V.	65V.DC	6.3V.AC	205V.DC
3	6SF7	0V.	±24V.DC	0V.	65V.DC	±25V.DC	225V.DC	6.3V.AC	0V.
4	6SJ7	0V.	0V.	0V.	-5V.DC	0V.	40V.DC	6.3V.AC	32V.DC
5	6V6GT	0V.	6.3V.DC	268V.DC	232V.DC	0V.	0V.	0V.	11V.DC
6	6X5GT	0V.	0V.	250VAC	0V.	250VAC	0V.	6.3VAC	288V.DC

RESISTANCE READINGS

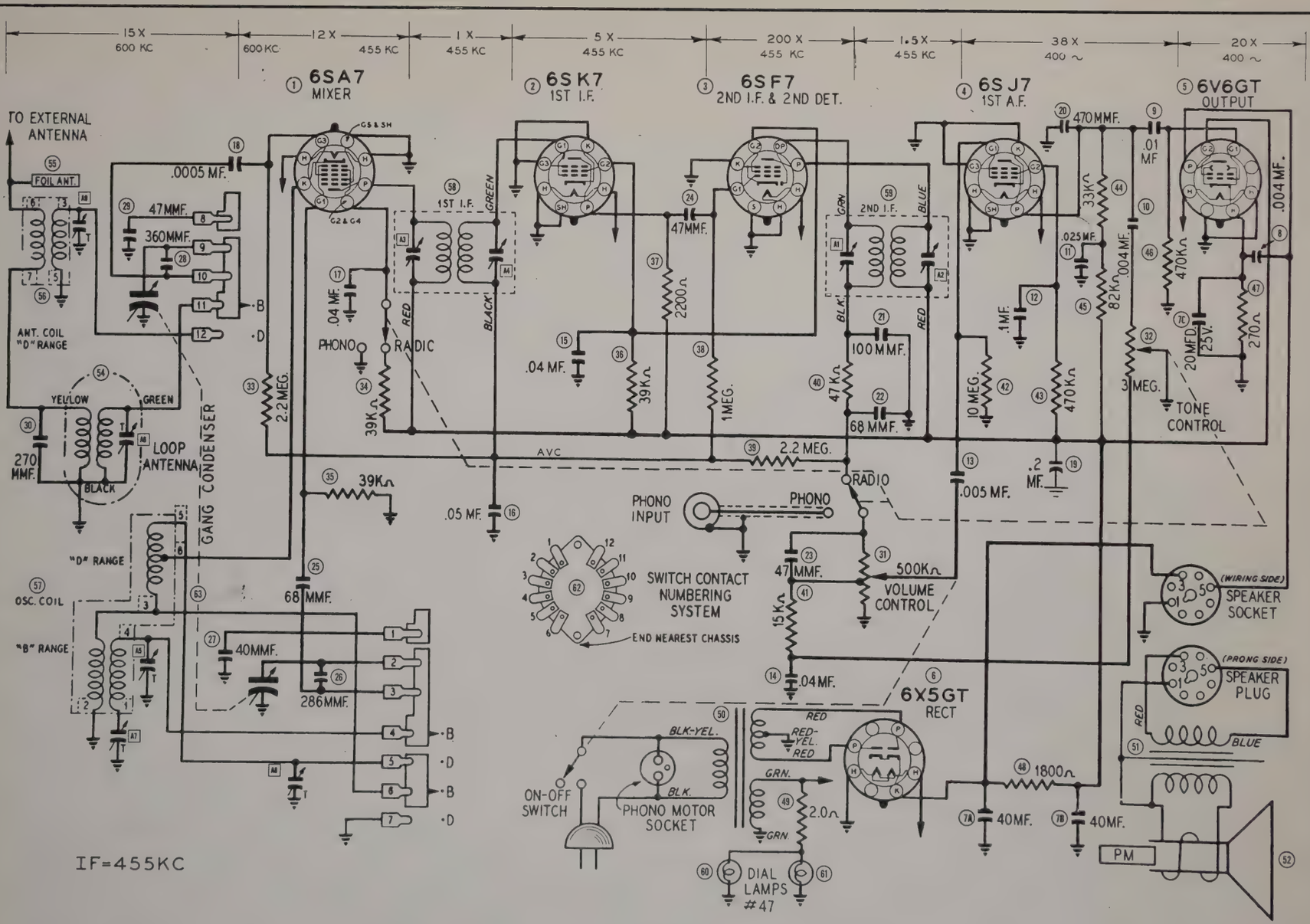
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SA7	0Ω	0Ω	80KΩ	120KΩ	38KΩ	.5Ω	.1Ω	4.4MEG.
2	6SK7	0Ω	0Ω	0Ω	2.2MEG.	0Ω	120KΩ	.1Ω	80KΩ
3	6SF7	0Ω	3.2MEG.	0Ω	120KΩ	490KΩ	80KΩ	.1Ω	0Ω
4	6SJ7	0Ω	0Ω	0Ω	10MEG.	0Ω	500KΩ	.1Ω	200KΩ
5	6V6GT	0Ω	.1Ω	80KΩ	80KΩ	420KΩ	INF.	0Ω	270Ω
6	6X5GT	INF.	0Ω	1500Ω	INF.	1700Ω	INF.	.1Ω	80KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



COIL TERMINALS



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

478-6

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

AIRLINE MODEL 74WG-2505A

TRADE NAME	Airline, Model 74WG-2505A
MANUFACTURER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated FM-AM Superheterodyne with Loop Antenna and Phono Provisions
TUBES (TEN)	Types, 6BA6 FM RF Amp., 6J6 FM Converter, 6BE6 AM Converter, 6BA6 IF Amp., 6BA6 FM 2nd IF Amp., 6AL5 FM Discriminator, 6AT6 Det.-AVC-AF, 6U5GT Tuning Eye, 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-125 Volts AC
RATING	.660 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	540-1600KC SHORT WAVE 9-15.5MC, FM 88-108MC

AIRLINE
MODEL 74 WG-2505 A

AIRLINE
MODEL 74 WG-2505 A PAGE 1

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1947 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	6BA6	6BA6	7CC	
2	FM Converter	6J6	6J6	7BF	
3	AM Converter	6BE6	6BE6	7CH	
4	IF Amp.	6BA6	6BA6	7CC	
5	FM 2nd IF Amp.	6BA6	6BA6	7CC	
6	FM Discriminator	6AL5	6AL5	6BT	
7	Det.-AVC-AF	6AT6	6AT6	7BT	
8	Tuning Eye	6U5GT	6U5GT	6R	
9	Power Output	6V6GT	6V6GT	7AC	
10	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
11	20	450	45X351	AF4J	UP2045	FP144	DY-20-450	EL-2	Filter
12	40	450	45X302	AF8J	UP4045	FP146	DY-40-450	EL-4	"
13	5	250	45X352	PRS250-5	BR425	TC70	M-4-450	UT-42	Ratio Detector Bias
14	.003	400	D66302	484-003	DT6D3	TP406	S-6-003	TC-23	Output Plate Bypass
15	.25	200	B66254	484-.25	DT4P25	TP430	S-4-25	TC-2	Bias Filter
16	.004	200	B66402	484-004	DT6D4	TP407	S-6-004	TC-24	Tone Compensation
17	.02	400	D66203	484-02	DT4S2	TP423	S-4-02	TC-12	Audio Coupling
18	.01	200	B66103	484-01	DT4S1	TP421	S-4-01	TC-11	"
19	.04	200	B66403	484-04	DT4S4	TP425	S-4-04	TC-14	Tone Compensation
20	.01	200	B66103	484-01	DT4S1	TP421	S-4-01	TC-11	Audio Coupling
21	.02	400	D66203	484-02	DT4S2	TP423	S-4-02	TC-12	1st IF Screen Bypass
22	.02	400	D66203	484-02	DT4S2	TP423	S-4-02	TC-12	1st IF Plate Decoup.
23	.05	200	B66503	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
24	.04	400	D66403	484-04	DT4S4	TP425	S-4-04	TC-14	AM Conv. Plate Decoup.
25	.04	400	D66403	484-04	DT4S4	TP425	S-4-04	TC-14	AM Conv. Screen Bypass
26	330	500	47X470	1468-0003	5W5T3	MC241	MO.5-330	1FM-33	Audio Plate Bypass
27	68		45X501						Tone Compensation Cer.
28A	50		47X112	1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	Diode Filter
B	50			1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	" "
29	68		45X501						Ratio Detector Load Cer.
30	68		45X501						" " " "
31	4700	300	47X491				MO.5-247		2nd IF Plate Decoup.
32	4700	300	47X491				MO.5-247		2nd IF Screen Bypass
33	4700	300	47X491				MO.5-247		RF Bypass Pwr. Supp.
34	4700	300	47X491				MO.5-247		2nd IF Cath. Bypass
35	47		47X495	1468-00005	5W5Q5	MC225	MO.5-447	1FM-45	IF Coupling Cer.
36	500		47X496	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	FM Conv. Plate Decoup. Cer.
37	500		47X496	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	RF Bypass Pwr. Supp.-Cer
38	47		47X498	1468-00005	5W5Q5	MC225	MO.5-447	1FM-45	Osc. Feedback Cer.
39	500		47X496	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	FM Conv. Plate Decoup-Cer
40	47		47X495	1468-00005	5W5Q5	MC225	MO.5-447	1FM-45	FM Conv. Grid Filter-Cer.
41	47		47X499	1468-00005	5W5Q5	MC225	MO.5-447	1FM-45	Osc. Coupling Cer.
42	5		47X500						Fixed Trimmer Cer.
43	100		47X497	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	RF Coupling Cer.
44	100		47X497	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	" " "
45	500		47X496	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	FM RF Cath. Bypass Cer.
46	500		47X496	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	FM RF Screen Bypass "
47	500		47X496	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	FM RF Plate Decoup. "
48	500		47X496	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	AVC Filter - Cer.
49	47		47X495	1468-00005	5W5Q5	MC225	MO.5-447	1FM-45	RF Coupling - Cer.
50	500		47X496	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	Filament Bypass Cer.
51	68		47X501						Osc. Grid Capacitor Cer.
52	40		47X504						Fixed Trimmer Cer.
53	286	500	47X481						Fixed Padder
54	470	500	47X467	1468-0005	5W5T5	MC245	MO.5-347	1FM-35	RF Coupling
55	47		47X503						Fixed Trimmer Cer.
56	360	500	47X474						Fixed Padder
57	270	500	47X445						Ant. Pri. Shunt
58	2700	300	47X492						De-emphasis

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
59A	500KΩ	1	36X363	TM227	D13-133X	T-78	Volume Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 59A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
60A	5 Meg.	1	40X259B			AM-69-Z	Tone Control
B	Shaft		Not Req.			KSS-3	Attach to 60A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
61	1 Meg.	½	B85105	BTS-1 Meg.	Br.-Blk.-Grn. FM RF Grid
62	68Ω	½	B83680	BW-½-68	Blue-Gray-Blk. FM RF Cathode
63	15KΩ	½	B85153	BTS-15K	Br.-Grn.-Or. FM RF Screen Dropping
64	1000Ω	½	B85102	BTS-1000	Br.-Blk.-Red Decoupling
65	100KΩ	½	B85104	BTS-100K	Br.-Blk.-Yl. FM Converter Grid
66	10KΩ	½	B84103	BTS-10K	Br.-Blk.-Or. FM Oscillator Grid
67	15KΩ	2	B85153	BT-2-15K	Br.-Grn.-Or. FM Oscillator Plate Decoupling
68	18KΩ	1	C85183	BTA-18K	Br.-Gray-Or. FM Oscillator Mixer Decoupling
69	82Ω	½	B84820	BW-½-82	Gray-Red-Blk. Parasitic Suppressor
70	39KΩ	½	B84393	BTS-39K	Or.-White-Or. AM Oscillator Grid
71	2.2 Meg.	½	B85225	BTS-2.2 Meg	Red-Red-Grn. AM Converter Grid
72	27KΩ	1	C84273	BTA-27K	Red-Vi.-Or. AM Converter Screen Dropping
73	1000Ω	½	B85102	BTS-1000	Br.-Blk.-Red Decoupling
74	2.2 Meg.	½	B85225	BTS-2.2 Meg	Red-Red-Grn. Bias Network
75	1 Meg.	½	B85105	BTS-1 Meg.	Br.-Blk.-Grn. Tuning Eye Plate Load
76	2.2 Meg.	½	B85225	BTS-2.2 Meg.	Red-Red-Grn. 1st IF Grid
77	1 Meg.	½	B85105	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
78	68Ω	½	B83680	BW-½-68	Blue-Gray-Blk. 1st IF Cathode
79	68KΩ	1	C84683	BTA-68K	Blue-Gray-Or. 1st IF Screen Dropping
80	2200Ω	½	B85222	BTS-2200	Red-Red-Red 1st IF Plate Decoupling
81	68Ω	½	B83680	BW-½-68	Blue-Gray-Blk. 2nd IF Cathode
82	39KΩ	1	C84393	BTA-39K	Or.-White-Or. 2nd IF Screen Dropping
83	2200Ω	½	B85222	BTS-2200	Red-Red-Red 2nd IF Plate Decoupling
84	27KΩ	½	B84273	BTS-27K	Red-Vi.-Or. Deemphasis
85	15KΩ	½	B83153	BTS-15K	Br.-Grn.-Or. Diode Load
86	15KΩ	½	B83153	BTS-15K	Br.-Grn.-Or. Diode Load
87	1 Meg.	½	B85105	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
88	470KΩ	½	B85474	BTS-470K	Yl.-Vi.-Yl. Series Phono
89	15KΩ	½	B83153	BTS-15K	Br.-Grn.-Or. Tone Compensation
90	47KΩ	½	B85473	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
91	4.7 Meg.	½	B85475	BTS-4.7 Meg	Yl.-Vi.-Grn. AF Grid
92	220KΩ	½	B85224	BTS-220K	Red-Red-Yl. AF Plate Load
93	220KΩ	½	B85224	BTS-220K	Red-Red-Yl. Output Grid
94	100KΩ	½	B83104	BTS-100K	Br.-Blk.-Yl. Output Grid
95	510KΩ	½	B83514	BTS-470K	Grn.-Br.-Yl. Bias Network
96	6.2Ω	½	43X217	BW-½-6.8	Blue-Red-Gold Series Pilot Light

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	THORDARSON PART No.	INSTALLATION NOTES
97	117V AC @ .66A	680V CT @ .083A	5.0V AC @ 1.8A	6.3V AC @ 3.3A	53X286	P-6013	T22R06	

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
98	5600Ω	3.3Ω	490Ω	.8Ω	Part of 12A470	A-3849	T22S46		

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIRLINE PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.		ST-175		
99	880Ω	3.3Ω	12A470	Mod.F10-S		
	CONE DIA.	VC DIA.				
100	9-3/4"	1"	ORDER FROM	MANUFACTURER.		Specify Part Number and letters stamped on speaker.

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	MEISSNER PART No.	
101	Loop Ant.	44Ω	1Ω	26A436		
102	SW Ant.Coil	1.3Ω	0Ω	9A1812	14-1044	
103	Dipole Ant.					
104	FM Ant.Coil	0Ω	0Ω	9A1875		
105	FM RF Coil		0Ω	9A1874		
106	FM RF Plate Choke Coil		.1Ω	9A1880		107A & 107B wound on same form
107A	BC Osc. Coil	1Ω	1.8Ω	9A1813		
B	SW " "		0Ω			
108	FM " "		0Ω	9A1873		
109	FM Osc.Plate Choke Coil		.3Ω	9A1882		
110	FM Mixer Plate Choke Coil		.1Ω	9A1880		
111	Filament Choke Coil		.5Ω	9A1881		
112A	AM Input IF	12.5Ω	11Ω*	9A1876	16-6672	112A & 112B in same can
B	FM Input IF	.1Ω				
113A	AM Output IF	15.5Ω#	12.5Ω	9A1877	16-6672‡	
B	FM " "		.4Ω			
114	Disc. Trans.	.9Ω	.2Ω	9A1895		

*Includes both sec.
#Includes both pri.
‡{Shunt FM Pri. with 100KΩ / Shunt FM Sec. with 100KΩ

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIRLINE PART No.		INSTALLATION NOTES
115	Bayonet	6.5	0.15	Brown			Type 47
116	"	"	"	"			"
117	"	"	"	"			"
118	"	"	"	"			"
119	"	"	"	"			"
120	"	"	"	"			"

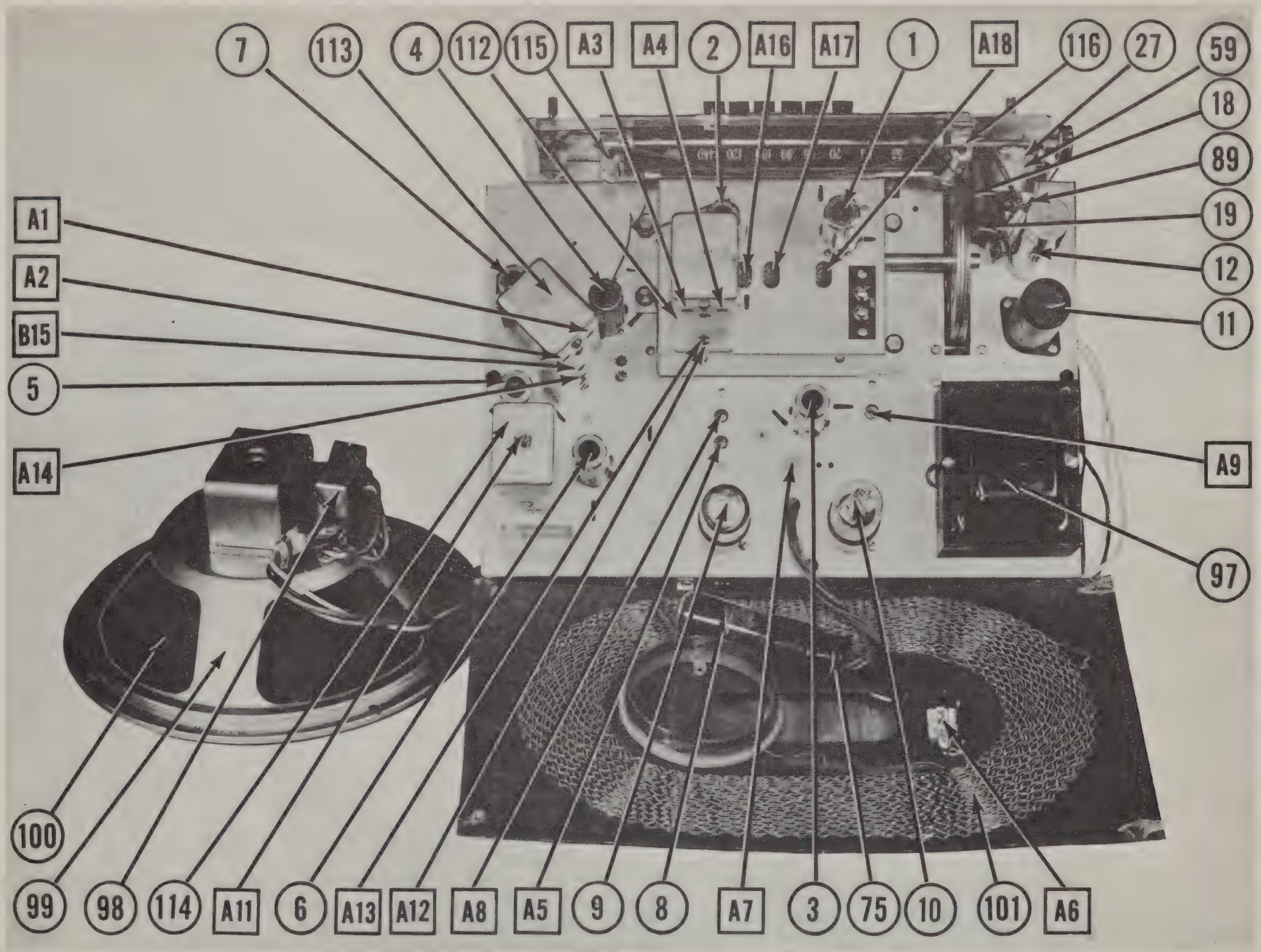
MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
121	Switch	2A367	Band - Phono
122	Tuning Gang	26A433	
A5, A8	Dual Trimmer	17A246	3.2-3.5 MMF (BC Osc. Adj.) (SW Osc. Adj.)
A9	Trimmer	17A244	5-50 MMF (SW RF Adj.)
A6	Trimmer	17A123	1.5-12MMF (BC Ant. Adj.)
A7	"	17A241	300-475 MMF (BC Osc. Padder)
A16, A17	Dual Trimmer	17A247	3-12 MMF (FM Osc. Adj.) (FM RF Adj.)
A18	Trimmer	17A249	5-25 MMF (FM Ant. Adj.)
	Pointer	15X221	
	Dial	58X590	

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to Pin 7 (grid) 6BE6. Low side to chassis.	455KC	BC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
200MMFD	High side to ext. ant. lead. Low side to chassis.	1620KC	"	"	"	A5	" " " "
200MMFD	"	1400KC	"	Tune for maximum output.	"	A6	Adjust for maximum output Set pointer at 1400 on the dial and secure firmly.
200MMFD	"	600KC	"	"	"	A7	Rock tuning cap and adjust for maximum output. Repeat steps 2-4.
400Ω	"	15.5MC	SW	Tuning cap. fully open.	"	A8	Adjust for maximum output
400Ω	"	15MC	"	Tune for maximum output.	"	A9	" " " "
.01 MFD	High side to Pin 1 (grid) of 2nd IF Tube 6BA6. Low side to chassis.	10.7MC (unmodulated)	FM	108MC	VTVM connected at junction of resistor 87 and band switch Low side to chassis.	A10	Adjust for maximum deflection.
.01 MFD	"	"	"	"	VTVM connected to junction of capacitors 20, 58 and resistor 84. Low side to chassis	A11	Adjust for zero deflection.
.01 MFD	"	"	"	"	Same as Step 7.	A10	Adjust for maximum deflection.
.01 MFD	"	"	"	"	Same as Step 8.	A11	Adjust for zero deflection.
.01 MFD	High side to RF stator of tuning cap. Low side to chassis.	"	"	"	Same as Step 7.	A12,A13	Adjust for maximum deflection.
.01 MFD	"	"	"	"	Same as Step 7	A14	Connect 5K resistor across 2nd IF secondary. Adjust for maximum deflection.
.01 MFD.	"	"	"	"	"	A15	Disconnect 5K resistor in Step 12 and connect it across 2nd IF primary. Adjust for maximum deflection. Repeat Steps 7-13.
300Ω	Disconnect dipole. High side to dipole terminal. Low side to other terminal.	108.4MC (Unmodulated)	"	Tuning cap. fully open.	"	A16	Adjust for maximum deflection.
300Ω	"	104.5MC	"	Tune for max deflection.	"	A17,A18	Adjust for maximum deflection. Repeat steps 14-15. Reconnect dipoles. Reinstall in cabinet.
200MMFD	High side to ext ant. lead. Low side to chassis.	1400KC	BC	Tune for maximum output.	Across voice coil	A6	Adjust for maximum output.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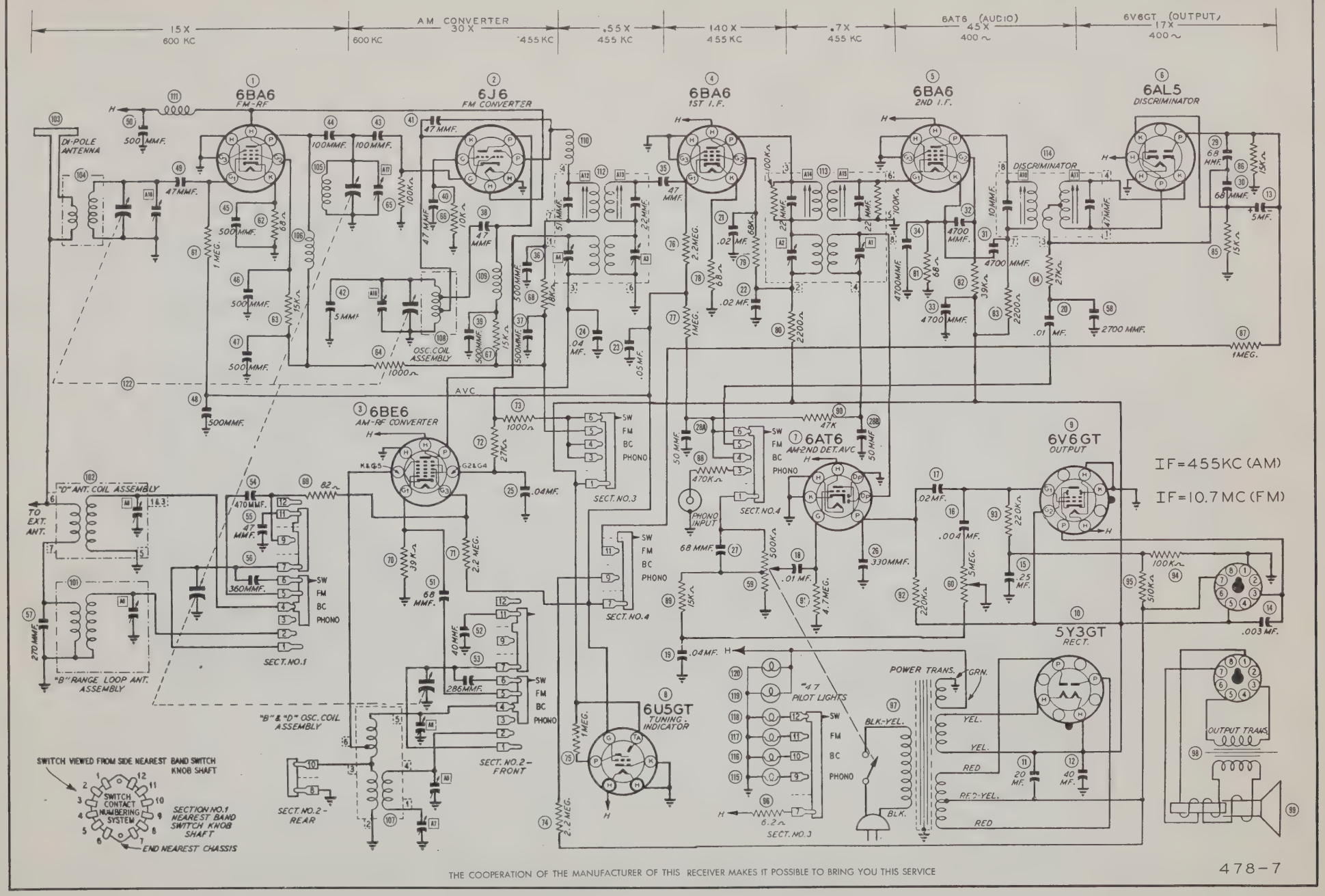

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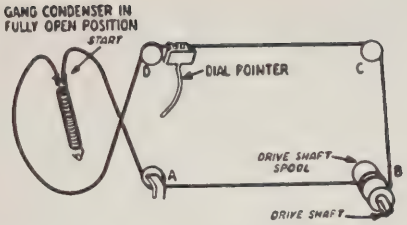
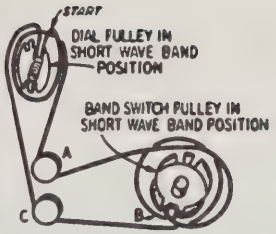
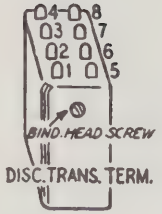
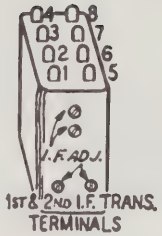


DIAL ROTATION CORD

Use a new 10X61 drive cord assembly or a new length of cord 21 inches long for the installation. Both the dial pulley and the band switch pulley must be turned to the short wave band positions as shown in the illustration. Install the new cord exactly as shown then change the position of the band switch several times and note the movement of the dial.







PUSHBUTTON ALIGNMENT
1. Turn receiver on and allow it to warm up for about 15 minutes.
2. Make a list of stations desired to be set up.
3. Pull out on all the buttons until they release with a snap.
4. Tune in the first station with the manual tuning control and push the first button on the right in completely.
5. Check accuracy of the setting by detuning with the manual tuning control. If it is off repeat Steps 3-5.
6. To set up the remaining buttons follow the same procedure as outlined above.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6 *	* 0V.	* 0V.	* 0V.	*6.3VAC	*213V.DC	*140V.DC	*1.4V.DC	
2	6J6*	*90V.DC	*100V.DC	* 0V.	*6.3VAC	*-4.6V.DC	*-3.6V.DC	* 0V.	
3	6BE6	-5.1V.DC	0V.	0V.	6.3V.AC	190V.DC	80V.DC	-.1V.DC	
4	6BA6	-.17V.DC	0V.	0V.	6.3V.AC	240V.DC	80V.DC	6V.DC	
5	6BA6*	* 0V.	* 0V.	* 0V.	*6.3VAC	*213V.DC	*98V.DC	*.9V.DC	
6	6AL5*	* 0V.	* 0V.	* 0V.	*6.3VAC	*.2V.DC	* 0V.	*.2V.DC	
7	6AT6	-.3V.DC	0V.	0V.	6.3V.AC	0V.	-.3V.DC	92V.DC	
9	6V6GT	0V.	6.3V.AC	240V.DC	268V.DC	-.6 V.DC	-9.7V.DC	0V.	0V.
10	5Y3GT	0V.	268V.DC	0V.	320V.AC	0V.	320V.AC	0V.	268V.DC

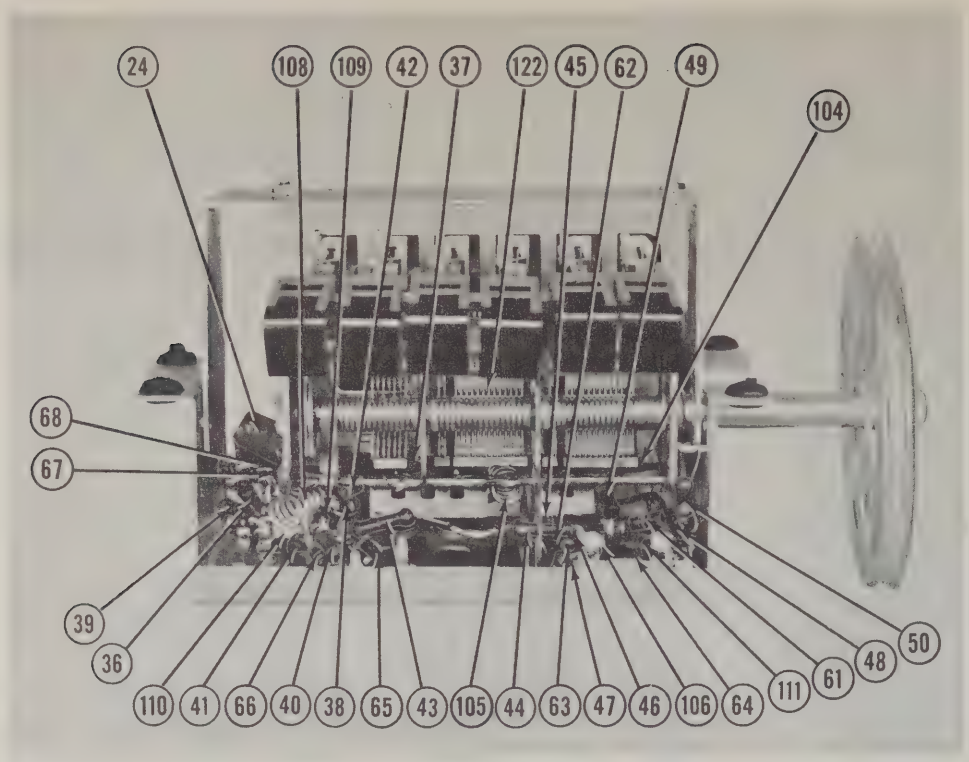
RESISTANCE READINGS

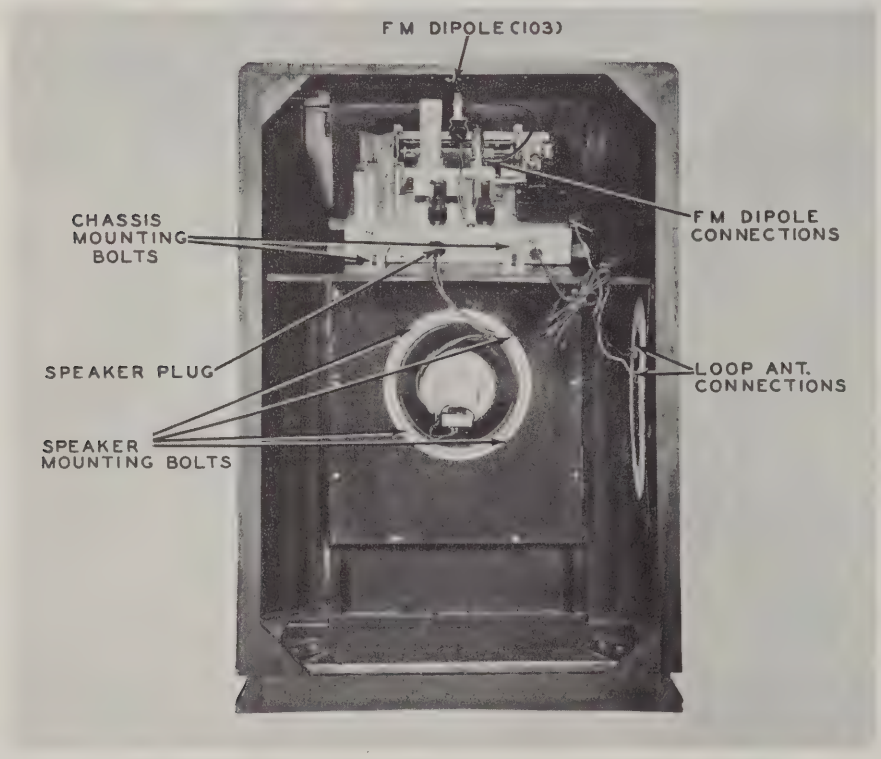
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6 *	1.7MEG.	* 0Ω	*0Ω	*.1Ω	*128KΩ	*140KΩ	*60Ω	
2	6J6 *	*150KΩ	*150KΩ	*0Ω	*.1Ω	*115KΩ	*10KΩ	*0Ω	
3	6BE6	35KΩ	.8Ω	0Ω	.1Ω	115KΩ	150KΩ	3.3MEG	
4	6BA6	3.3MEG.	0Ω	0Ω	.1Ω	115KΩ	190KΩ	60Ω	
5	6BA6 *	* 0Ω	* 0Ω	* .0Ω	*.1Ω	*115KΩ	*170KΩ	* 60Ω	
6	6AL5 *	* INF.	*INF.	* 0Ω	*.1Ω	*11KΩ	* INF.	*11KΩ	
7	6AT6	4.7MEG	0Ω	0Ω	.1Ω	0Ω	440KΩ	320KΩ	
9	6V6GT	INF.	.1Ω	115KΩ	115KΩ	300KΩ	80KΩ	0Ω	0Ω
10	5Y3GT	INF.	115KΩ	INF.	1000Ω	INF.	1000Ω	INF.	115KΩ

*VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

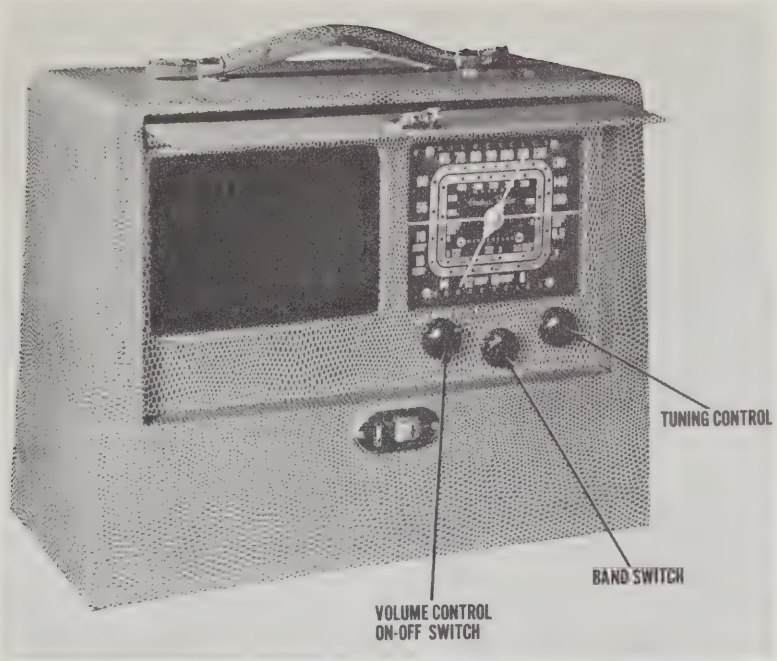
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.





DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove speaker plug from chassis.
3. Remove four screws holding speaker to chassis. Remove speaker.
4. Remove three red screws holding chassis to mounting board.
5. Remove tuning eye tube from clamp.
6. Remove leads from loop antenna.
7. Remove leads to FM dipole from terminal strip on chassis.
8. Remove black lead going to bottom shield.
9. Remove two wood screws holding chassis mounting brackets.
10. Remove chassis from cabinet.
11. Remove nails holding loop antenna. Remove loop antenna.



ANDREA MODEL P-I63

TRADE NAME	Andrea, Model P-I63 (Chassis I63)
MANUFACTURER	Andrea Radio Corp., 27-01 Bridge Plaza North, Long Island City 1, N.Y.
TYPE SET	Three Power Portable 3-Band Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 1R5 Converter, (2) 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 3Q5GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY RATING	110-130 Volts AC-DC or 9 Volt "A" Supply & 90 Volt "B" Supply .240 Amp. @ 117 Volts AC or 50MA @ 8.9 Volts DC & 9½MA @ 89 Volts DC
TUNING RANGE—BROADCAST	530-1600KC **SHORT WAVE** 2.1MC. 6.4MC. 6.2-18.5MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a capacitor in series with the low side of the signal generator and B-. Volume should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to front stator of tuning cap. Low side to chassis.	455KC	BC	Tuning cap. open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used, without an isolation transformer, reduce dummy ant. to 200 MMF. to reduce hum modulation.
2	200MMFD.	High side to ant. lug. Low side to chassis.	1500KC	"	1500KC	"	A5	Adjust for maximum output.
3	200MMFD.	"	"	"	Tune for maximum output.	"	A6	" " " "
4	200MMFD.	"	600KC	"	600KC	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 2-3.
5	400Ω	"	6MC	SW 1	6MC	"	A8	Adjust for maximum output.
6	400Ω	"	"	"	Tune for maximum output.	"	A9	Rock tuning cap. and adjust for maximum output.
7	400Ω	"	18MC	SW 2	18MC	"	A10	Adjust for maximum output. Turn signal generator to approximately 18.9MC. The image should be heard. If it is not reset signal generator to 18MC and open A10 to next peak. Recheck for image as outline above.
8	400Ω	"	"	"	Tune for maximum output.	"	A11	Rock tuning cap and adjust for maximum output.

ANDREA
MODEL P-163 (CHASSIS 163)
BATTERY OPERATED

ANDREA
MODEL P-163 (CHASSIS 163)
BATTERY OPERATED

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

ANDREA MODEL P-I63
(Chassis I63) BATTERY OPERATED

TUBES

ITEM No.	USE	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	IF Amp.	1N5GT	1N5GT	5Y	
4	Det.-AVC-AF	1H5GT	1H5GT	5Z	
5	Power Output	3Q5GT	3Q5GT	7AP	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ANDREA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150		AF888D			DH-2x50-150	EL-351	◓ Filter
B	40	150		"			"	"	■ "
C	100	25		PRS25-50†			M-100-25		▲ Filament Bypass
D	100	25		PRS25-100			M-100-25	UHC-102	" "
8	.1	400	HC4	484-.1	DT4P1	TP428	S-4-1	TC-1	Line Filter
9	.1	200		484-.1	DT4P1	TP428	S-4-1	TC-1	Pwr. Supp. Bypass ‡
10	.003	600	HC35	684-003	DT6D3	TP406	S-6-003	TC-23	Output Plate Bypass
11	.003	600	HC20	684-003	DT6D3	TP406	S-6-003	TC-23	Audio Coupling
12	.003	600	HC20	684-003	DT6D3	TP406	S-6-003	TC-23	" "
13	.1	200		484-.1	DT4P1	TP428	S-4-1	TC-1	IF Decoupling
14	.1	200		484-.1	DT4P1	TP428	S-4-1	TC-1	Filament Bypass
15	.05	200	HC6	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
16	.25	200		484-.25	DT4P25	TP430	S-4-25	TC-2	Filament Bypass
17	.05	200	HC6	484-05	DT4S5	TP426	S-4-05	TC-15	Conv. Screen Decoup.
18	.05	200	HC6	484-05	DT4S5	TP426	S-4-05	TC-15	Filament Bypass
19	.05	200	HC6	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
20	.01	400	HC32	484-01	DT4S1	TP421	S-4-01	TC-11	Ext. Ant. Coupling
21	100	500	HC93	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Tone Compensation
22	100	500	HC93	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	IF Bypass Diode
23	500	500	HC101	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	IF Coupling
24	3500	300							Fixed Padder
25	1500	300							" "
26	100	500	HC93	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Osc. Grid Capacitor
27	4		HC206						Neutralizing -Cer.

‡Not used in all models.
†Parallel with one section of AF Type.

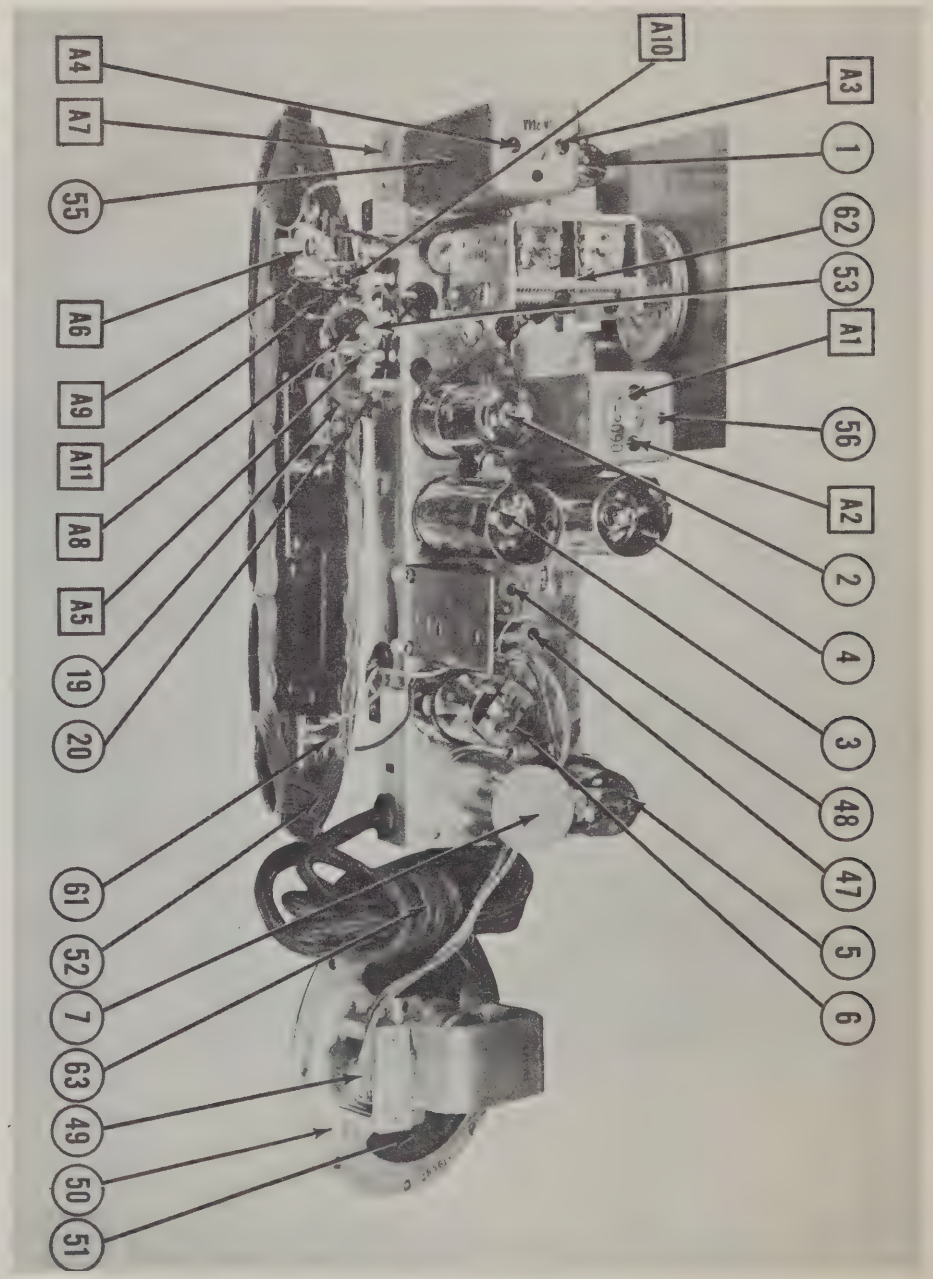
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANDREA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
28A	1 Meg.	1	FM762	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 28A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANDREA PART No.	IRC PART No.	IDENTIFICATION CODES
29	100KΩ	½	GR7	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
30	1000Ω	½	GR78	BTS-1000	Br.-Blk.-Red Filament String
31	10Ω	½		BW-½-10	Br.-Blk.-Blk. Parasitic Suppressor
32	10KΩ	½		BTS-10K	Br.-Blk.-Or. Converter Decoupling
33	15KΩ	½	GR83	BTS-15K	Br.-Grn.-Or. IF Plate Load
34	100KΩ	½	GR7	BTS-100K	Br.-Blk.-Yl. 2nd IF Grid
35	3 Meg.	½	GR87	BTS-3.3 Meg.	Or.-Blk.-Grn. AVC Network
36	3 Meg.	½	GR87	BTS-3.3 Meg.	Or.-Blk.-Grn. AVC Network
37	150Ω	½	GR30	BW-½-150	Br.-Grn.-Br. IF Decoupling
38	3 Meg.	½	GR87	BTS-3.3 Meg.	Or.-Blk.-Grn. AVC Network
39	100KΩ	½	GR7	BTS-100K	Br.-Blk.-Yl. Diode RF Filter
40	3 Meg.	½	GR87	BTS-3.3 Meg.	Or.-Blk.-Grn. AF Grid
41	1000Ω	½	GR78	BTS-1000	Br.-Blk.-Red Filament String

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ANDREA PART No.	IRC PART No.	
42	1 Meg.	½	GR10	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
43	2 Meg.	½	GR23	BTS-2.2 Meg.	Red-Blk.-Grn. Output Grid
44	5000Ω	½		BTS-4700	Grn.-Blk.-Red Filament String
45	100Ω	3	GR113	AB-100	Rectifier Ballast
46	1500Ω	½	GR10	BTS-1500	Br.-Grn.-Red Filter
47	1400Ω	10	GR124	AB-1450	Filament String
48	700Ω	10	GR125	AB-750	" "

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ANDREA PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
49	7800Ω	3.6Ω	450Ω	.48Ω	Part of FM-773	A-3878	T22S47		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ANDREA PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107		
50	PM	3.6Ω	FM-773	Mod. P5-V		
	CONE DIA.	VC DIA.				
51	4-5/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ANDREA PART No.	MEISSNER PART No.	
52	Loop Ant.	.1Ω	1.7Ω	SA213		
53A	SW Ant. Coil (Band 2)	16Ω	1Ω	SA212		53A & 53B wound on same form.
53B	SW Ant. Coil (Band 3)	.5Ω	.1Ω			
54A	BC Osc. Coil (Band 1)	2Ω	5.5Ω	SA210		54A & 54B wound on same form.
54B	SW Osc. Coil (Band 3)	.5Ω	0Ω			
55A	SW Osc. Coil (Band 2)	100Ω*	.5Ω	SA211		Mounted inside input IF can.
55B	Input IF	19Ω	20Ω	SA214A		
56	Output IF	19Ω	19Ω	SA209D	16-6660	

*100Ω resistor in series with primary.

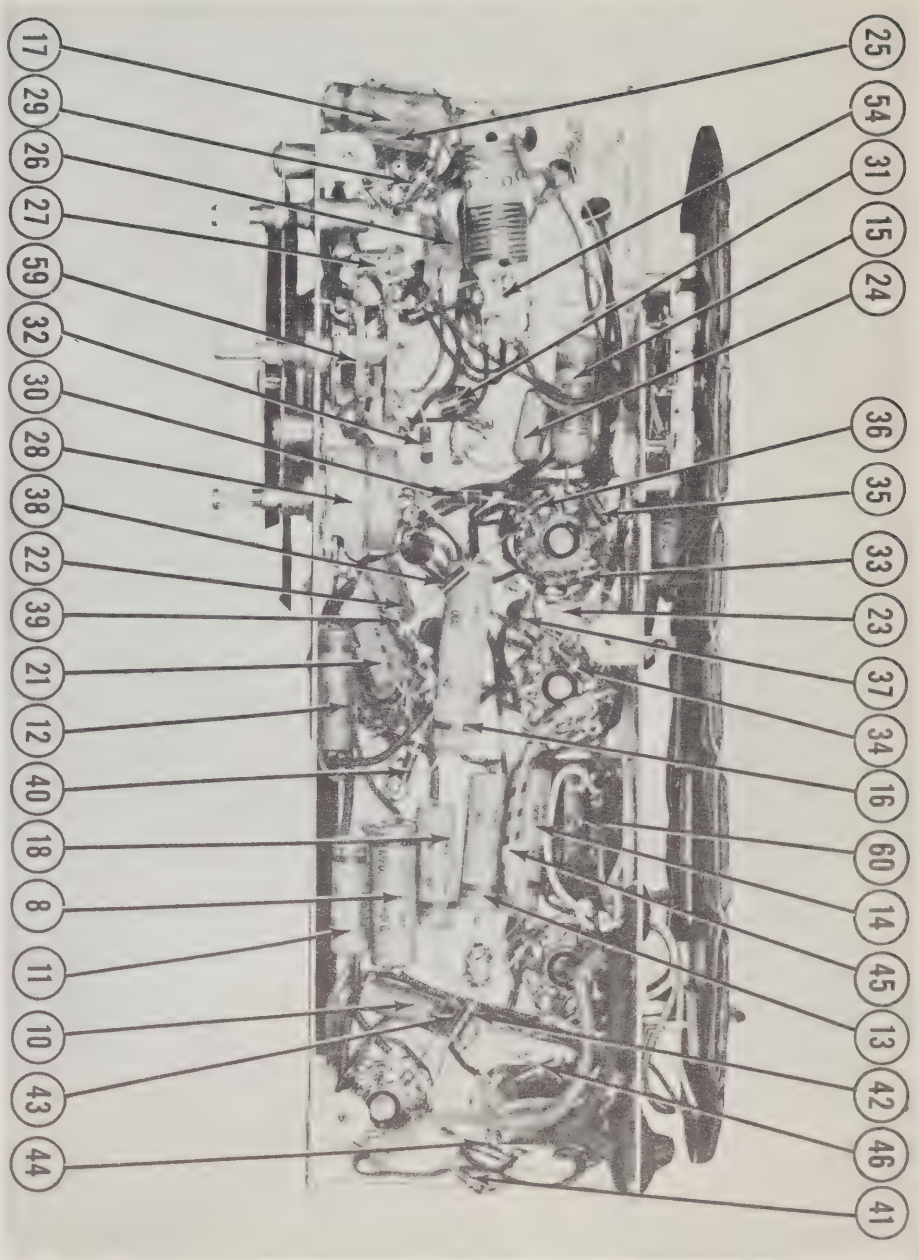
BATTERIES

ITEM No.	VOLTAGE	ANDREA PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
57	4½ V.		(2) #746			2 Used in Series
58				(2) #762 or (2) #482		2 Used in Series

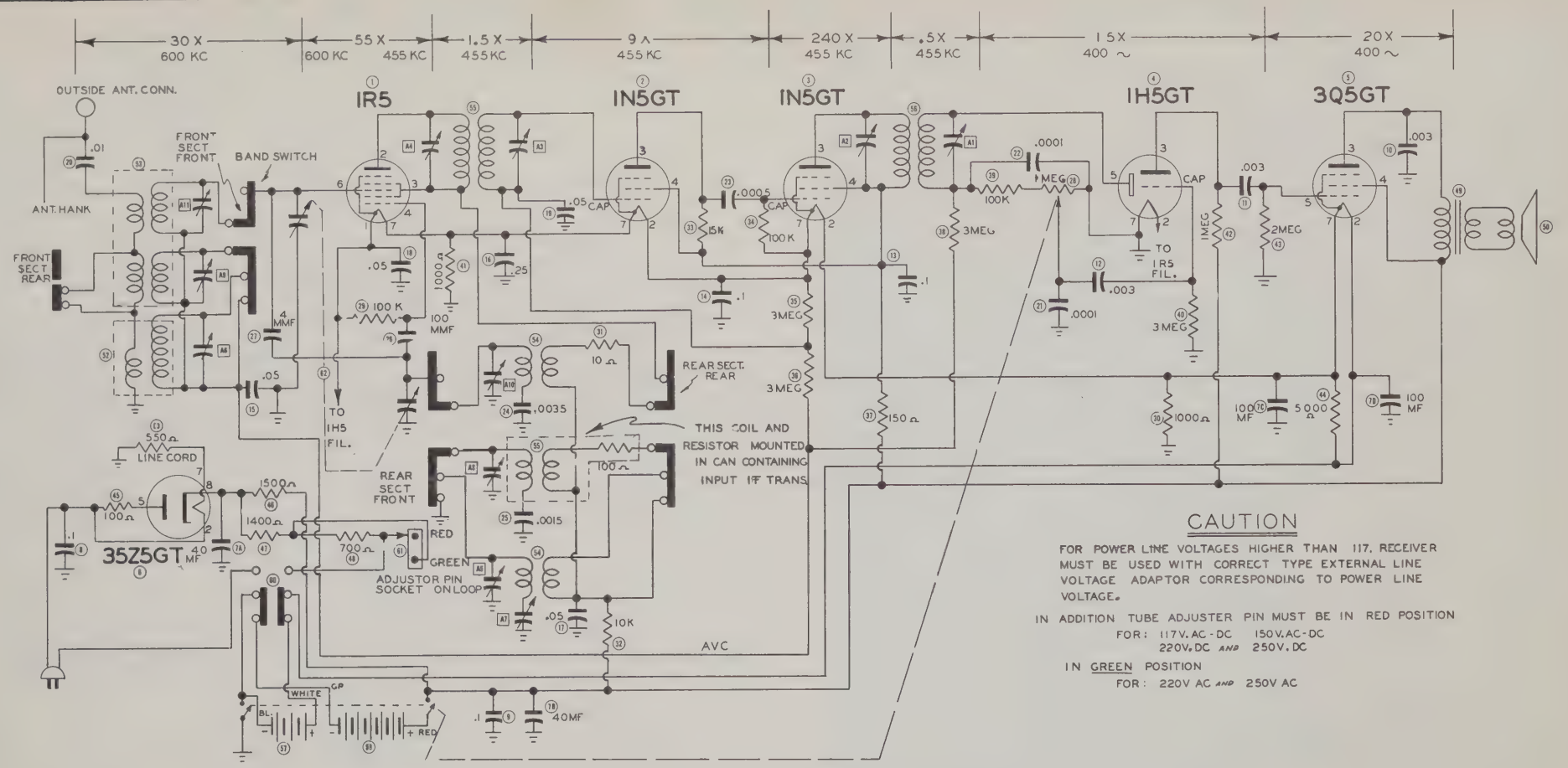
MISCELLANEOUS

ITEM No.	PART NAME	ANDREA PART No.	NOTES
59	Bandswitch	FM-798	
60	Switch		Power Change-Over
61	Selector Switch		Line Voltage
62	2 Gang Var. Cap	FM-759	16-479 MMF (each section)
63	Line Cord Res.	FM-760	550Ω

CHASSIS—BOTTOM VIEW



ANDREA MODEL P-163
(CHASSIS 163) BATTERY OPERATED



CAUTION

FOR POWER LINE VOLTAGES HIGHER THAN 117. RECEIVER MUST BE USED WITH CORRECT TYPE EXTERNAL LINE VOLTAGE ADAPTOR CORRESPONDING TO POWER LINE VOLTAGE.

IN ADDITION TUBE ADJUSTER PIN MUST BE IN RED POSITION
FOR: 117 V. AC - DC 150 V. AC - DC
220 V. DC AND 250 V. DC

IN GREEN POSITION
FOR: 220 V AC AND 250 V AC

IF=455KC

VOLTAGE AND RESISTANCE TAKEN IN BROADCAST POSITION
VOLTAGE AND RESISTANCE TAKEN IN AC/DC POSITION
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

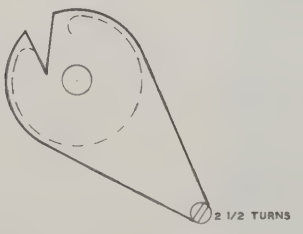
VOLTAGE READINGS

ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	CAP
1	1R5	14 V. DC	57 V. DC	57 V. DC	-1.65 V. DC	1.4 V. DC	.1 V. DC	2.8 V. DC		
2	1N5GT	0 V.	4.2 V. DC	82 V. DC	92 V. DC	0 V.	-.65 V. DC	28 V. DC	.1 V. DC	.1 V. DC
3	1N5GT	0 V.	5.7 V. DC	92 V. DC	92 V. DC	92 V. DC	2.8 V. DC	42 V. DC	117 V. AC	.1 V. DC
4	1H5GT	0 V.	1.4 V. DC	62 V. DC	0 V.	-.1 V. DC	-.1 V. DC	0 V.	0 V.	0 V.
5	3Q5GT	0 V.	8.2 V. DC	88 V. DC	92 V. DC	0 V.	4.2 V. DC	5.7 V. DC	7 V. DC	
6	35Z5GT	0 V.	117 V. AC	110 V. AC	92 V. DC	110 V. AC	0 V.	85 V. AC	112 V. DC	

RESISTANCE READINGS

ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	CAP
1	1R5	*	14 K Ω	14 K Ω	100 K Ω	*	2 MEG.	*		
2	1N5GT	0 Ω	*	20 K Ω	3800 Ω	0 Ω	2 MEG.	*	1.7 MEG.	1.7 MEG.
3	1N5GT	0 Ω	*	3800 Ω	3800 Ω	3800 Ω	90 K Ω	*	580 Ω	90 K Ω
4	1H5GT	0 Ω	*	1.1 MEG	INF.	800 K Ω	800 K Ω	*	2.4 MEG.	2.4 MEG.
5	3Q5GT	0 Ω	*	3800 Ω	3800 Ω	1.6 MEG.	1.1 MEG.	*	*	
6	35Z5GT	INF.	580 Ω	550 Ω	3800 Ω	650 Ω	0 Ω	525 Ω	2000 Ω	

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE



DIAL CORD DRIVE

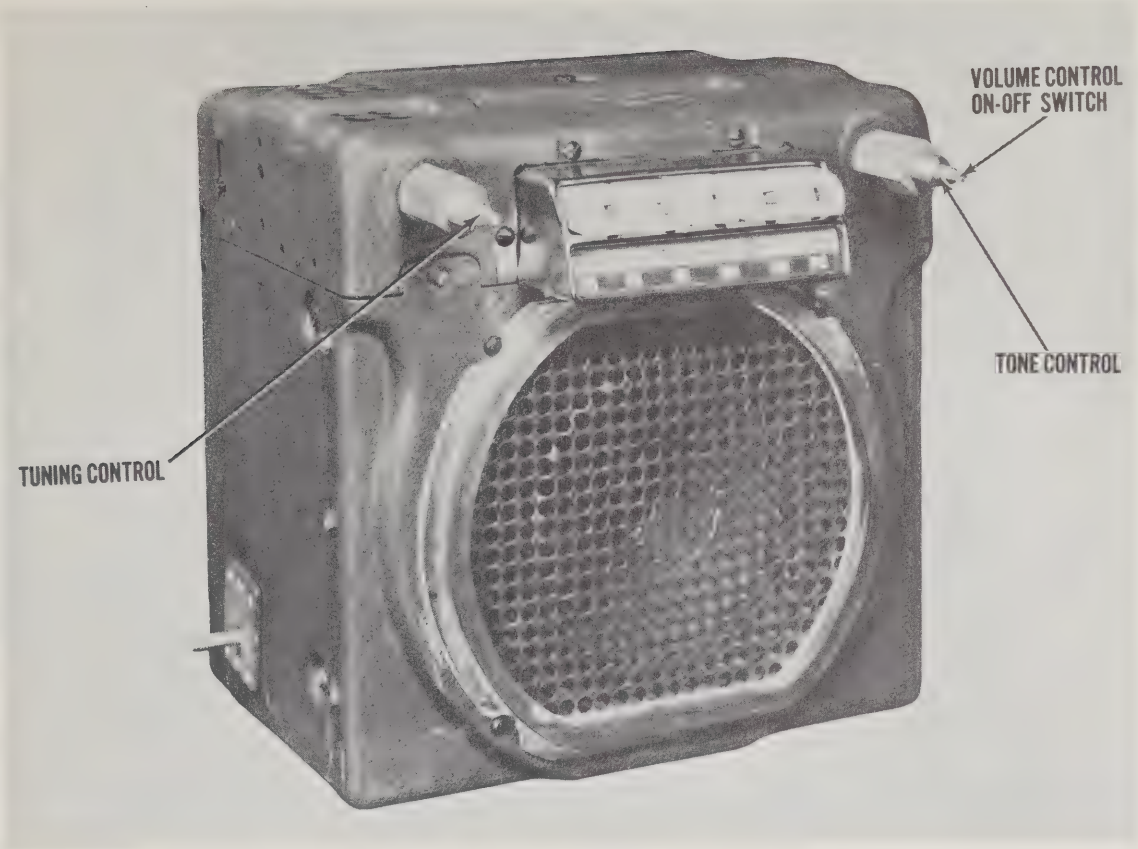
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

478-8

The stage gain measured values listed above are approximate values values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment etc., that an absolute reading is impractical. Volume control is shorted during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

BUICK
MODELS 980690, 980733



BUICK
MODELS 980690, 980733

BUICK MODEL 980733

TRADE NAME	Buick, Models 980690, 980733
SUPPLIER	Buick Motor Div., Gen. Motor Corp., Flint, Mich.
TYPE SET	Battery Operated Automobile Superheterodyne Receiver with Pushbutton Tuning
TUBES (SIX)	Types, 6K7 RF Amp., 6SA7 Converter, 6SK7 IFAmp. 6SR7 Det.-AVC-AF, (2) 6V6GT Power Output.
POWER SUPPLY	6-8 Volt Storage Battery
TUNING RANGE—BROADCAST	550-1600KC RATING 7.4 Amp. @ 6.3 Volts DC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap. fully closed and set pointer to left edge of dial plate opening. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting. After set has been installed in car adjust A7 for maximum volume on a weak station near 1430KC.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to stator of RF section of tuning cap. Low side to chassis.	262KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
.1 MFD.	"	1615KC	"	"	A5	" " " "
60 MMFD.	High side to ant. receptacle. Low side to chassis.	1430KC	Tune for maximum output.	"	A6,A7	" " " "
60 MMFD.	"	600KC	"	"	A8,A9	Rock tuning cap. and adjust for maximum output. Repeat last two steps.

PUSHBUTTON ADJUSTMENTS

1. Turn set on and allow it to warm up for about 15 minutes.
2. Release holding spring on bottom of button by pushing spring to left and remove button.
3. Loosen re-set screw and push in firmly.
4. Hold it in and tune in desired station accurately.
5. Release button and tighten re-set screw. Replace button.
6. Follow same procedure for remaining buttons.

HOWARD W. SAMS & CO., INC. Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BUICK PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6K7	6K7	7R	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SR7	6SR7	8Q	
5	Power Output	6V6GT	6V6GT	7AC	
6	Power Output	6V6GT	6V6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BUICK PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	450	7240612		UP6BJ38	FP234	DY-2x20-450	EL-220	■ Filter
B	20	450							▲ "
8A	20	25	7238553	AF444D	UP4CJ43	FP306	DY-3x20-25	EL-325	■ Bias Filter
B	20	25							▲ Cath. Bypass
C	20	25							" "
9A	.015	1500	7236075	1684-015	MD16S15	OTC75	TM-16-015	TR-11	Buffer
B	.015	1500		1684-015	MD16S15	OT375	TM-16-015	TR-11	"
10	.0015	600	7236134	1084-001	MD16D1	TP455	TM-6-001	TR-21	Output Plate Bypass
11	.025	400	1211232	484-025	DT4S25	TP451	S-4-02	TR-21	Tone Compensation
12	.0025	400	7240578	484-002	DT6D2	TP405	FM-16-002	TC-12	" "
13	.2	400	7240579	484-.2	DT4P2	TP429	S-4-2	TC-2	Audio Coupling
14	.005	600	7230912	684-005	DT6D5	TP408	TM-6-005	TC-25	" "
15	.01	600	1206600	684-01	DT6S1	TP410	TM-6-01	TC-11	IF Cath. Bypass
16	.1	400	1207908	484-.1	DT4P1	TP428	S-4-1	TC-1	Screen Bypass
17	.1	400	1207908	484-.1	DT4P1	TP428	S-4-1	TC-1	Cath. Bypass
18	.1	400	1207908	484-.1	DT4P1	TP428	S-4-1	TC-1	AVC Filter
19	.02	600	1212099	684-02	DT6S2	TP412	TM-6-02	TC-12	" "
20	560	500	7240566	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	Hash Filter
21	560	500	7240526	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	" "
22	560	500	7240526	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	" "
23	120	500	7240577	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Tone Compensation
24	220	500	7236105	1468-0002	5W5T2	MC237	MO.5-322	1FM-32	Audio Plate Bypass
25	660	500	7236151						Osc. Grid Capacitor
26	12		7242450						Fixed Trimmer Cer.
27	47	500	7233313	1468-00005	5W5Q5	MC225	MO.5-447	1FM-45	AVC Coupling

CONTROLS

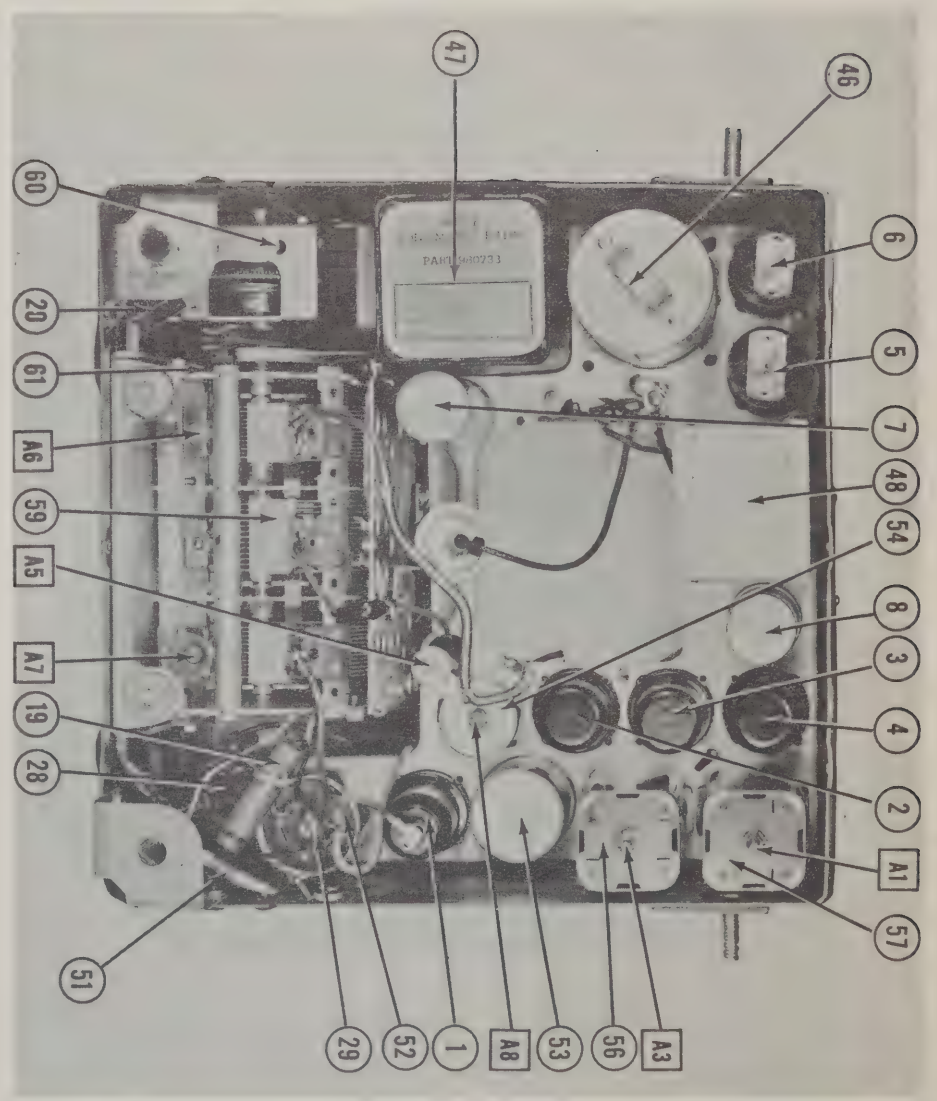
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BUICK PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
28A	1 Meg.	1	{7241928*}				Volume Control & Switch-See Note
B	250KΩ	1					Tone Control - " "
28A	1 Meg.	1	{7241967#}				Volume Control & Switch- " "
B	250KΩ	1					Tone Control - " "

Note-This is a dual control operated by concentric shafts. *Used in Model 980733. #Used in Model 980690.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BUICK PART No.	IRC PART No.	IDENTIFICATION CODES
29	220KΩ	½	1214555	BTS-220K	Red-Red-Yl. AVC Network
30	22KΩ	2	7240590	BT-2-22K	Red-Red-Or. Screen Dropping
31	22KΩ	½	1214550	BTS-22K	Red-Red-Or. Oscillator Grid
32	390Ω	½	1213482	BW-½-390	Or.-White-Br. Converter Cathode
33	820Ω	½	1214544	BTS-820	Gray-Red-Br. IF Cathode
34	1 Meg.	½	1213282	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
35	1 Meg.	½	1213282	BTS-1 Meg.	Br.-Blk.-Grn. AVC Diode Load
36	1500Ω	½	1213237	BTS-1500	Br.-Grn.-Red AF Cathode
37	68Ω	½	1214543	BTS-680	Blue-Gray-Br. AF Cathode
38	75KΩ	½	1213844	BTS-68K	Vi.-Grn.-Or. Tone Compensation
39	220KΩ	½	1214555	BTS-220K	Red-Red-Yl. Diode Load
40	330Ω	½	1213284	BW-½-330	Or.-Or.-Br. AF Cathode
41	27KΩ	1	1213842	BTA-27K	Red-Vi.-Or. AF Plate Load
42	330Ω	2	1214572	BW-2-330	Or.-Or.-Br. Output Cathode
43	1800Ω	2	1214573	BT-2-1800	Br.-Gray-Red Filter
44	100Ω	½	1213217	BW-½-100	Br.-Blk.-Br. Hash Suppression
45	100Ω	½	1213217	BW-½-100	Br.-Blk.-Br. " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: BUICK PART No.	MALLORY PART No.	RADIART PART No.	INSTALLATION NOTES
46	Synchronous	6.3	115~	7235951	716	5426	

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: BUICK PART No.	STANCOR PART No.	THORDARSON PART No.	INSTALLATION NOTES
47	6.0V DC @ 4.3A	760V CT @ .065A			7240519		T22R221	†Drill new mounting holes.

CHOKE (COUPLING)

ITEM NO	RATINGS: IMPEDANCE	D. C. RESISTANCE	REPLACEMENT DATA: BUICK PART NO.	STANCOR PART NO.	THORDARSON PART NO.	INSTALLATION NOTES
48A	Matched to P-P Grids	1800Ω	Part of 7240464			

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: BUICK PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
48B	9300Ω CT	3.7Ω	380Ω CT	.3Ω	Part of 7240464				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: BUICK PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.				
49	6.3Ω	3.7Ω	7240469			
	CONE DIA.	VC DIA.				
50	7-3/8"	7/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: BUICK PART No.	MEISSNER PART No.
51	Ant. Choke Coil		8Ω	2240251	
52	Ant. Coil Assembly	.5Ω	.7Ω	7242232	
53	RF Coil Assy	60Ω	3Ω	7242238	
54	Osc. " "		9Ω	724411	
55	RF Choke		0Ω	7241708	
56	Input IF	32Ω	31Ω	7238546	16-5740
57	Output IF	30Ω		7240467	

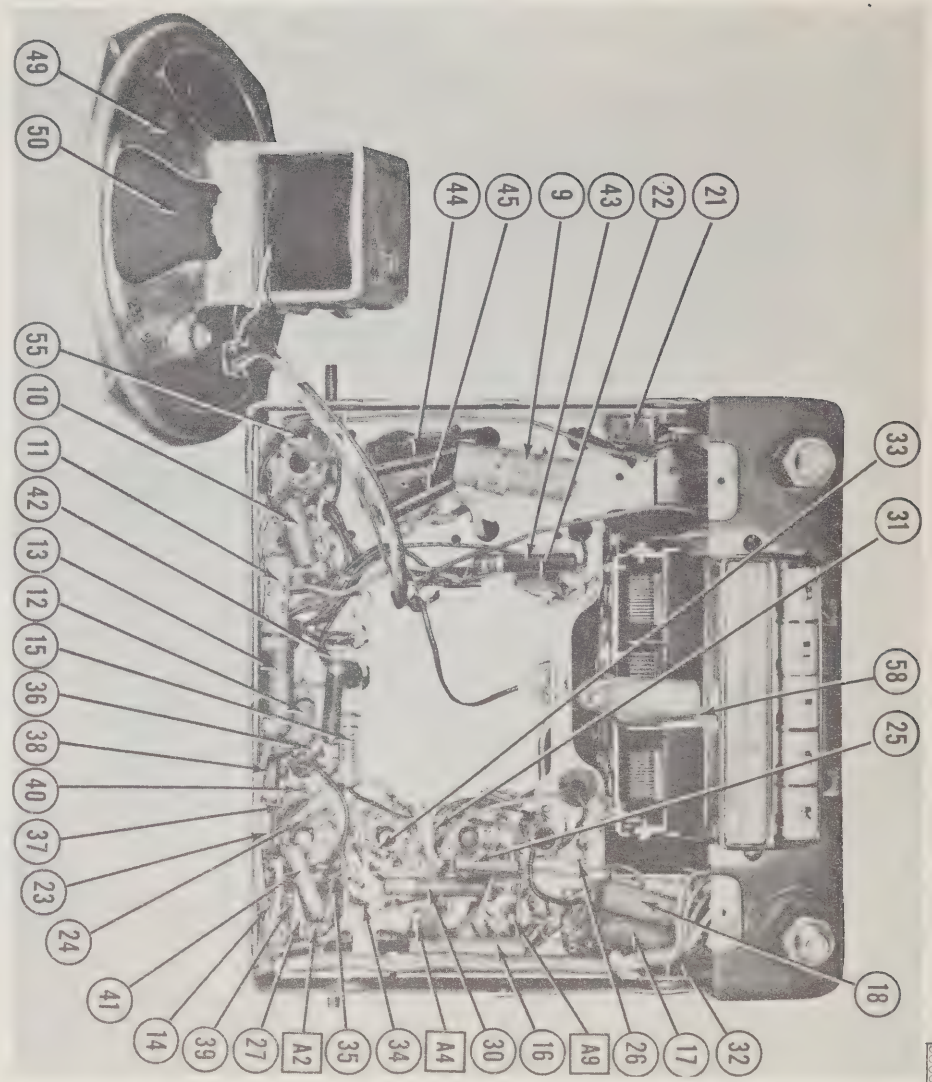
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: BUICK PART No.		INSTALLATION NOTES
58	Bayonet	7.5	0.2	White	125588		Type 51

MISCELLANEOUS

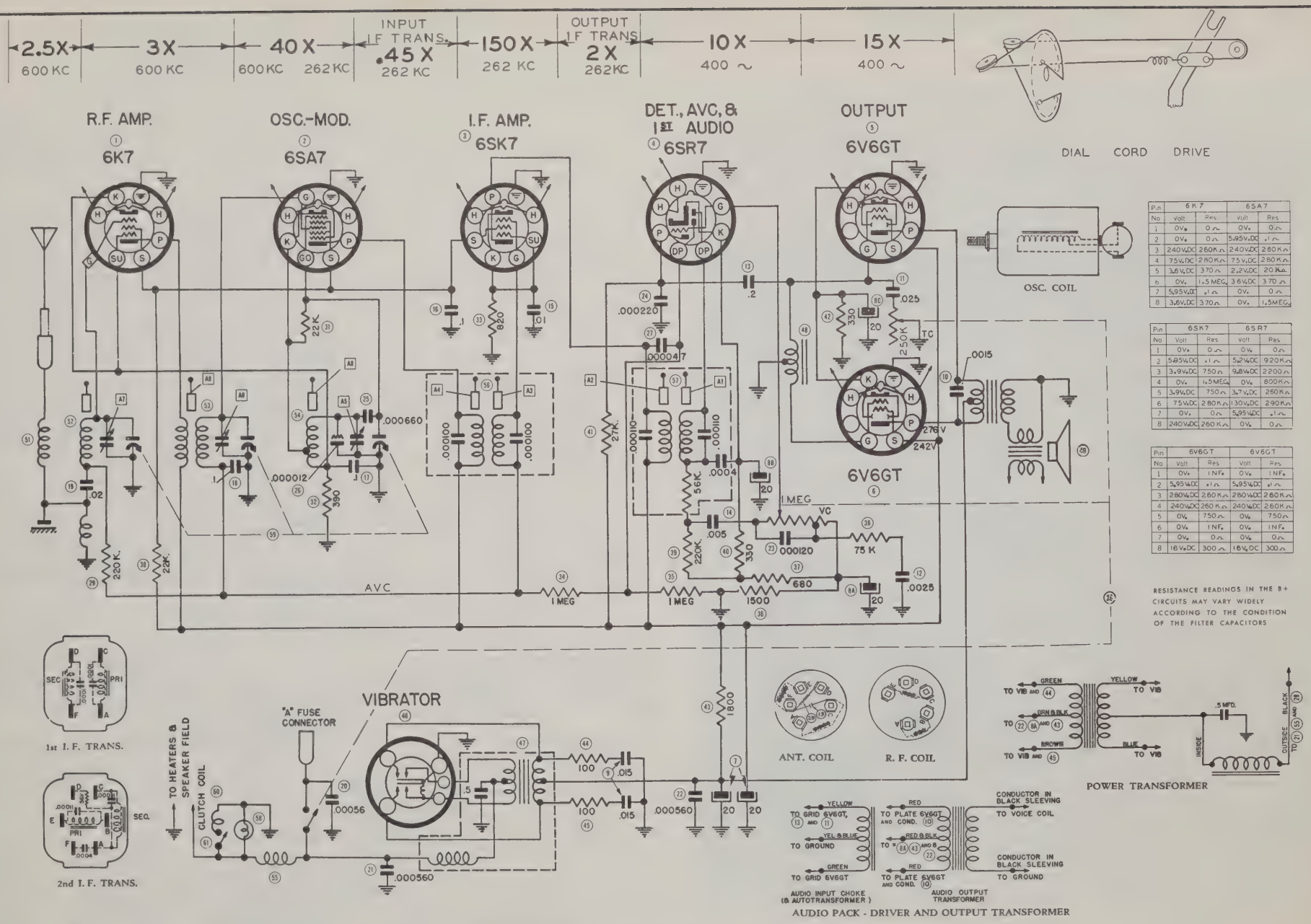
ITEM No.	PART NAME	BUICK PART No.	NOTES
59	3 Gang Var. Cap	7242350	(22-527 MMF) each section
60	Clutch Assembly	7240471	Includes Coil & Gears
61	Switch Assembly	7240397	Declutching
	Tuner Assembly	7242350	Model 980733
	" "	7242170	" 980690

CHASSIS—BOTTOM VIEW



BUICK MODELS 980690, 980723

BUICK MODELS 980690, 980723



Pin No	6K7 Volt	6K7 Res	6SA7 Volt	6SA7 Res
1	0V.	0 Ω	0V.	0 Ω
2	0V.	0 Ω	5.95V.DC	.1 Ω
3	240V.DC	260K Ω	240V.DC	280K Ω
4	75V.DC	280K Ω	75V.DC	280K Ω
5	3.6V.DC	370 Ω	2.2V.DC	20 KΩ
6	0V.	1.5 MEG.	3.6V.DC	370 Ω
7	5.95V.DC	.1 Ω	0V.	0 Ω
8	3.6V.DC	370 Ω	0V.	1.5MEG.

Pin No	6SK7 Volt	6SK7 Res	6SR7 Volt	6SR7 Res
1	0V.	0 Ω	0V.	0 Ω
2	5.95V.DC	.1 Ω	5.2V.DC	920K Ω
3	3.9V.DC	750 Ω	9.8V.DC	2200 Ω
4	0V.	1.5MEG.	0V.	800K Ω
5	3.9V.DC	750 Ω	3.7V.DC	260 KΩ
6	75V.DC	280K Ω	130V.DC	290K Ω
7	0V.	0 Ω	5.95V.DC	.1 Ω
8	240V.DC	260 K Ω	0V.	0 Ω

Pin No	6V6GT Volt	6V6GT Res	6V6GT Volt	6V6GT Res
1	0V.	INF.	0V.	INF.
2	5.95V.DC	.1 Ω	5.95V.DC	.1 Ω
3	280V.DC	260 K Ω	280V.DC	260 K Ω
4	240V.DC	260 K Ω	240V.DC	260 K Ω
5	0V.	750 Ω	0V.	750 Ω
6	0V.	INF.	0V.	INF.
7	0V.	0 Ω	0V.	0 Ω
8	16V.DC	300 Ω	16V.DC	300 Ω

IF=262KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

478-9

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to chassis.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ARVIN
MODEL 665 (CH. RE-229)

ARVIN
MODEL 665 (CH. RE-229)

ARVIN MODEL 665

TRADE NAME	Arvin, Model 665 (Ch. RE-229)
MANUFACTURER	Noblitt-Sparks Industries, Inc., Radio Division, Columbus, Indiana
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne with Loop Antenna
TUBES (SIX)	Types, 6SS7 RF Amp., 12SA7 Converter, 6SS7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1600KC **SHORT WAVE** .290 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer to last reference mark at low freq. end of dial. Use isolation transformer if available. If not, connect a capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
	.05 MFD	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.05 MFD	High side to Pin 4 (grid) 6SS7. Low side to B-.	"	"	"	A5	Adjust for minimum output.
3	50 MMFD	High side to ext. ant. lug. Low side to ext. ground lug.	1400KC	1400KC	"	A6	Adjust for maximum output.
4	50 MMFD	"	"	Tune for maximum output.	"	A7	" " " "

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove phono-motor plug from chassis.
3. Remove phono-pickup plug from chassis.
4. Remove speaker plug from chassis.
5. Remove two wood screws holding loop antenna to cabinet. Remove antenna.
6. Remove four screws holding chassis to cabinet. Remove chassis.
7. Remove four hex nuts holding speaker to cabinet. Remove speaker.

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PARTS LIST AND DESCRIPTIONS

ARVIN MODEL
665 (Ch. RE-229)

TUBES

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SS7	6SS7	8N	
2	Converter	12SA7	12SA7	8R	
3	IF Amp.	6SS7	6SS7	8N	
4	Det.-AVC-AF	12SQ7	12SQ7	8Q	
5	Power Output	50L6GT	50L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	10	150	A19780	PRSA150-40-20	EZ42215	TN129	DSB-403020-150	TA-240	Filter - Yellow
B	20	150						UT-121	" - Blue
C	40	150		PRS150-12					" - Red
8	.01	400	C20068-103	484-01	DT4S1	TP421	S-4-01	TC-11	Output Plate Bypass
9	.002	600	C20068-202	684-002	DT6D2	TP405	S-6-002	TC-22	Tone Compensation
10	.01	400	C20068-103	484-01	DT4S1	TP421	S-4-01	TC-11	Audio Coupling
11	.002	600	C20068-202	684-002	DT6D2	TP405	S-6-002	TC-22	" "
12	.05	200	C20067-503	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
13	.002	600	C20068-202	684-002	DT6D2	TP405	S-6-002	TC-22	Phono Coupling
14	.002	600	C20068-202	684-002	DT6D2	TP405	S-6-002	TC-22	Tone Compensation
15	.05	200	C20067-503	484-05	DT4S5	TP426	S-4-05	TC-15	Phono Isolation
16	.05	400	C20068-503	484-05	DT4S5	TP426	S-4-05	TC-15	Line Filter
17	.2	400	A19765	484-2	DT4P2	TP429	S-4-2	TC-2	Line Isolation
18	500	500	C20065-501	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	Audio Plate Bypass
19	500	500	C20065-501	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	IF Bypass Vol. Cont.
20	50	500	C20065-500	1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	Osc. Grid Capacitor
21	1000	500	C20128-102	1468-001	1W5D1	MC255	MW.5-21	1FM-21	RF Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	1 Meg.	1	C19582	MK402	D13-137	AM-63-Z	Volume Control
B	Not Req.		Not Req.	E	KSS-3		Attach to 22A per instructions
23A	500KΩ	1	C19946	UM156	D11-133	AM-58-S	Tone Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 23A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

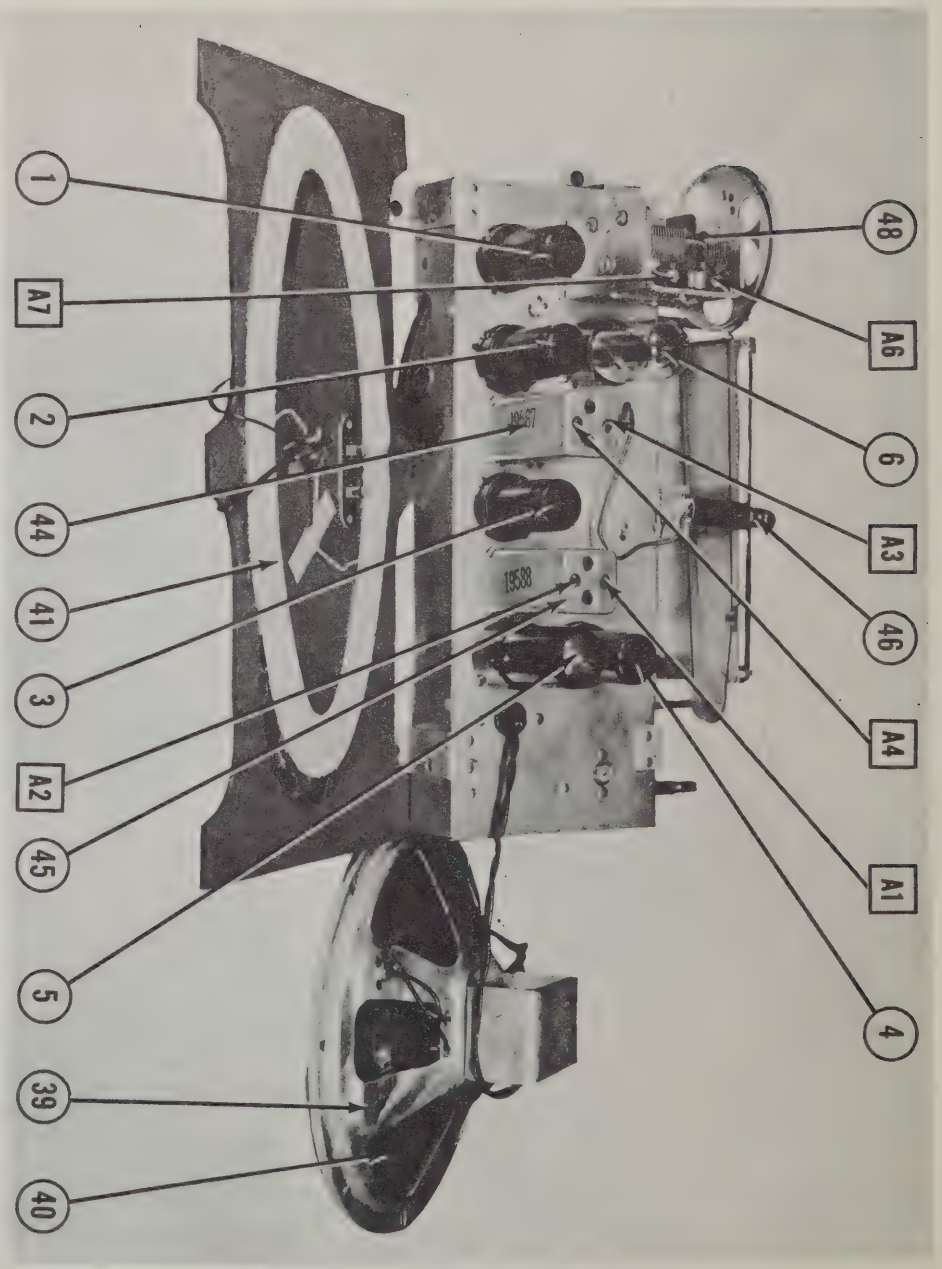
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARVIN PART No.	IRC PART No.	IDENTIFICATION CODES
24	2200Ω	½	C-20060-222	BTS-2200	Red-Red-Red RF Plate Load
25	1 Meg.	½	C-20060-105	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid-See Note
26	22KΩ	½	C-20060-223	BTS-22K	Red-Red-Or. Oscillator Grid
27	15 Meg.	½	C-20060-156	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
28	2.2 Meg.	½	C-20060-225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
29	15 Meg.	½	C-20060-156	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
30	470KΩ	½	C-20060-474	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
31	150Ω	½	C-20060-151	BW-½-150	Br.-Grn.-Br. Output Grid
32	12KΩ	1	C-20070-123	BTA-12K	Br.-Red-Or. Bias
33	15Ω	½	C-20060-150	BW-½-15	Br.-Grn.-Blk. Filter
34	330Ω	½	C-20060-331	BW-½-330	Or.-Or.-Br. Pilot Light Shunt
35	220KΩ	½	C-20060-224	BTS-220K	Red-Red-Yl. Series Phono
36	330KΩ	½	C-20060-334	BTS-330K	Or.-Or.-Yl. Line Isolation

Note 1-Some models use 100KΩ in this application. IRC replacement BTS-100K.

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000~)	REPLACEMENT DATA: ARVIN PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	INSTALLATION NOTES
37	.039A	210Ω	6 Henries	AC21073-1	C-1706	T20C52	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARVIN PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
38	2500Ω	110Ω	3.4Ω	.4Ω	AC19591-1	A-3876	T22S45		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ARVIN PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-112		
39	PM	3.4Ω	D-19882	Mod. P8-T		
	CONE DIA.	VC DIA.				
40	7-3/8"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

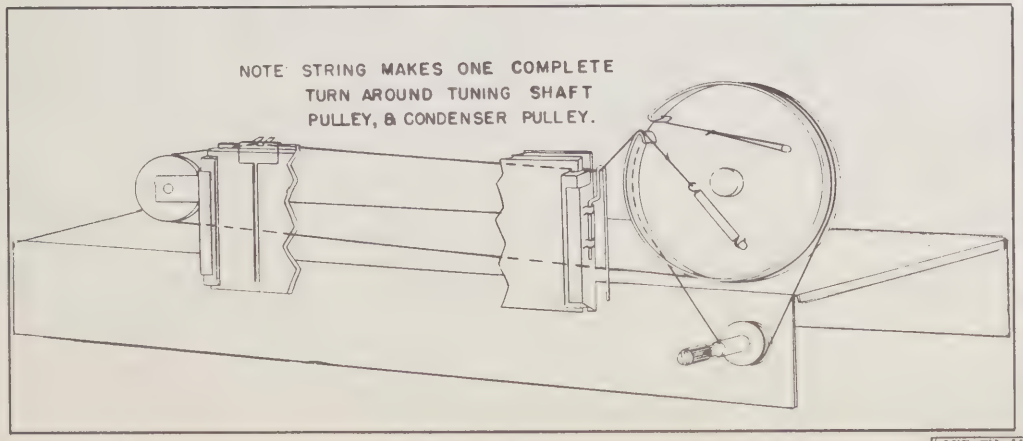
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ARVIN PART No.	MEISSNER PART No.	
41	Loop Ant.	.1Ω	1Ω	A5-19698-1		
42	Osc. Coil	.5Ω	5Ω	AC-18256-1	14-1040	
43	Wave Trap		27Ω	AC-21039-1		
44	Input IF	16Ω	16Ω	AC-19587-1	16-6658	
45	Output IF	16Ω	15Ω	AC-19588-1	16-6660	

DIAL LIGHT

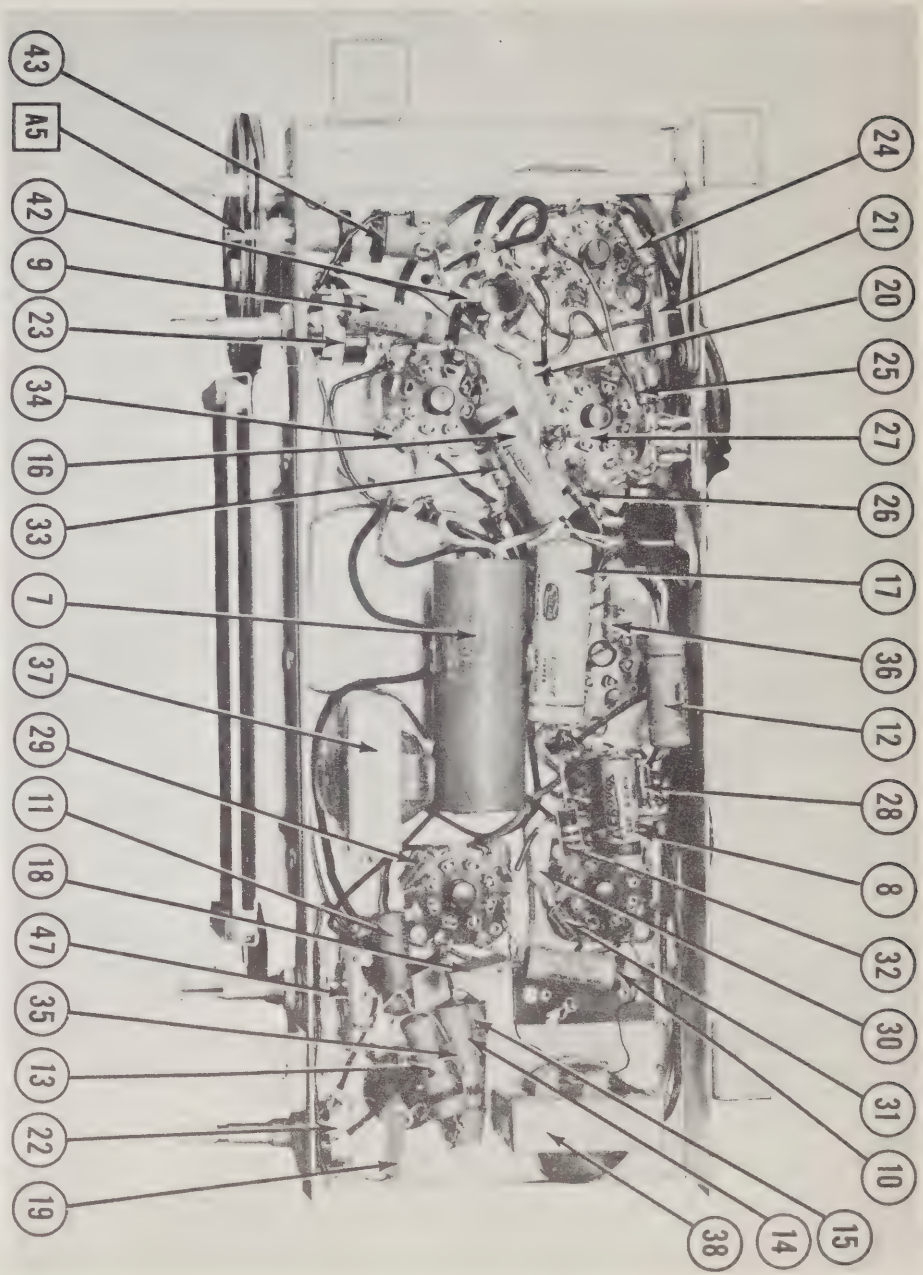
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ARVIN PART No.		
46	Bayonet	6.3	0.15	Brown	A19351		Type 47

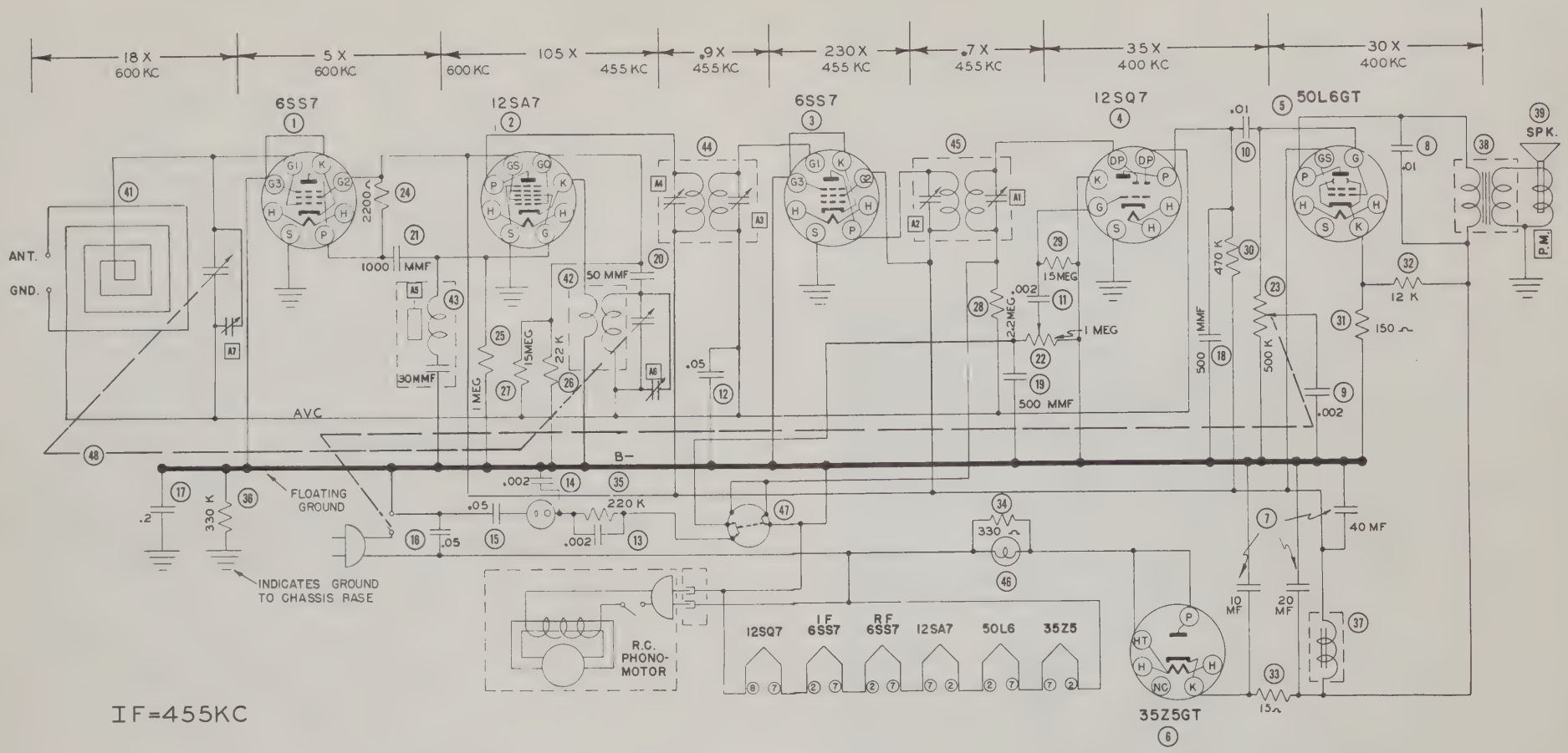
MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
47	Switch	C19580	Radio-Phono
48	2 Gang Var. Cap	C19584	21-197 MMF, 33-419 MMF
	Dial Pointer	A19889	
	Dial Glass	C19890	
	Record Changer	AE19645	



CHASSIS—BOTTOM VIEW





IF=455KC

RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6 SS 7	0V.	17V.AC	0V	-.5V.DC	0V.	115V.DC	23V.AC	94V.AC
2	12SA7	0V.	7.6V.AC	115V.DC	115V.DC	-4.6V.DC	0V.	88V.AC	5.1V DC
3	6SS7	0V.	11V.AC	0V.	-.5V.DC	0V.	115V.DC	17V.AC	115V.DC
4	12SQ7	0V.	-.5V.DC	0V.	-.45V.DC	-.5V.DC	60V.DC	11V.AC	0V.
5	50L6GT	0V.	7.6V.AC	120V.DC	115V.DC	0V.	0V.	23V.AC	6.9V.DC
6	35Z5GT	0V.	117V.AC	113V.AC	0V.	113V.AC	117V.AC	88V.AC	125V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SS7	310K Ω	17Ω	0Ω	2.5MEG	0Ω	12K Ω	23 Ω	14K Ω
2	12SA7	310 KΩ	67Ω	12K Ω	12K Ω	18K Ω	.5 Ω	76 Ω	3.5MEG
3	6SS7	310KΩ	11Ω	0Ω	2.5 MEG	0Ω	12KΩ	17 Ω	12K Ω
4	12SQ7	310K Ω	12MEG.	0Ω	670KΩ	2.5MEG	480K Ω	11Ω	0Ω
5	50L6GT	INF.	67Ω	12K Ω	12K Ω	460KΩ	0Ω	23 Ω	125Ω
6	35Z5GT	INF.	100Ω	99Ω	INF.	99Ω	100Ω	76 Ω	12KΩ

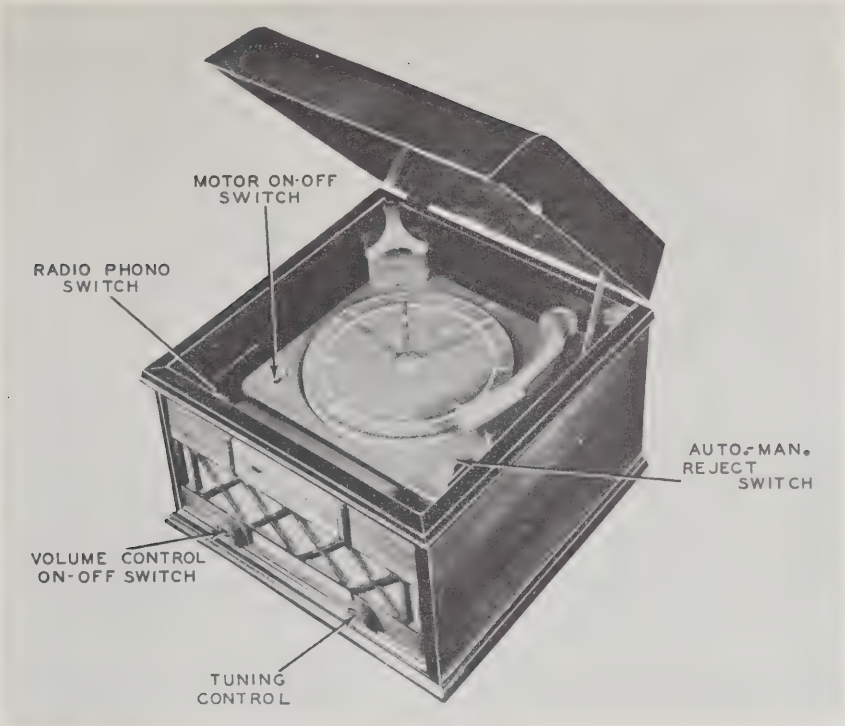
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

478-10

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



CLARION
MODEL 11305

CLARION
MODEL 11305

CLARION MODEL 11305

TRADE NAME	Clarion, Model 11305
MANUFACTURER	Warwick Mfg. Corp., 4640 W. Harrison St., Chicago 44, Ill.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne - Self Contained Loop Antenna
TUBES (FOUR)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	535-1725KC RATING .330 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer to 1st mark on left end of dial backplate. Use isolation transformer if available. If not, connect a capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001 MFD to reduce hum modulation.
250MMFD	"	1725KC	"	"	A5	Adjust for maximum output.
	Loop	1500KC	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control knobs.
2. Remove lock nut on phono-control switch.
3. Remove phono-motor plug from receptacle.
4. Disconnect phono-pickup leads.
5. Remove six screws from loop antenna.
6. Remove four screws holding chassis mounting board.
7. Remove chassis.
8. Remove three self-tapping screws holding chassis board to chassis.

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

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PARTS LIST AND DESCRIPTIONS

CLARION MODEL 11305

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		*CLARION PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-IF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CLARION PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	
5	40	150	A18-280	PRS150-40	BR4015	TC48	M-40-150	UT-401	Filter
6	40	150	A18-280	PRS150-40	BR4015	TC48	M-40-150	UT-401	"
7	.1	400	A16-160	484-.1	DT4P1	TP428	S-4-1	TC-1	Line Filter
8	.2	400	A16-154	484-.2	DT4P2	TP429	S-4-2	TC-2	Line Isolation
9	.005	600	A16-153	684-005	DT6D5	TP408	S-6-005	TC-25	Output Plate Bypass
10	.02	400	A16-150	484-02	DT4S2	TP423	S-4-02	TC-12	Audio Coupling
11	.1	200	A16-157	484-.1	DT4P1	TP428	S-4-1	TC-1	Audio Plate Bypass
12	.01	400	A16-156	484-01	DT4S1	TP421	S-4-01	TC-11	Audio Coupling
13	.05	200	A16-152	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
14	250	500	A15-276	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Audio Plate Bypass
15	250	500	A15-276	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	IF Bypass Vol. Cont.
16	50	500	A15-175	1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	Osc. Grid Capacitor

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CLARION PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
17A	500KΩ	1	A24-164	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

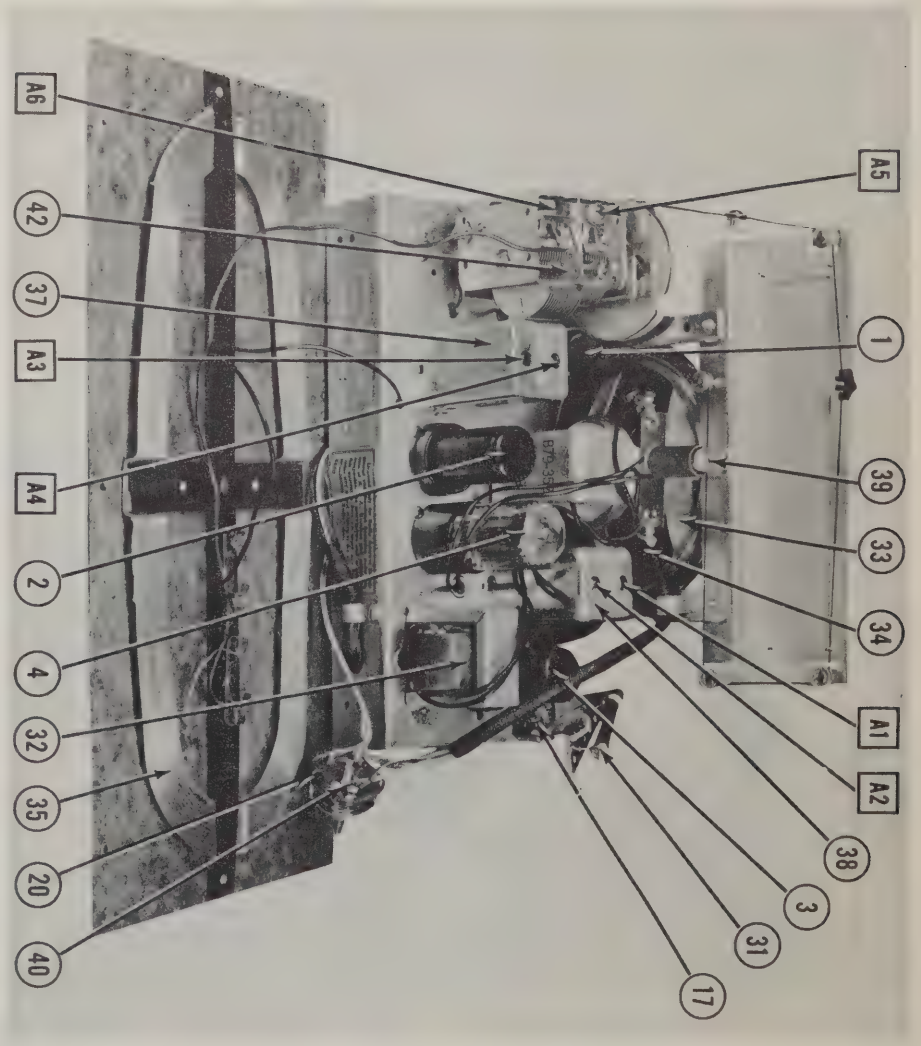
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CLARION PART No.	IRC PART No.	
18	22KΩ	½	A60-659	BTS-22K	Red-Red-Or. Oscillator Grid
19	15 Meg.	½	A60-664	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
20	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. Series Phono
21	2.2 Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
22	4.7 Meg.	½	A60-669	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
23	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
24	220KΩ	½	A60-667	BTS-220K	Red-Red-Yl. AF Plate Decoupling
25	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl. Output Grid
26	120Ω	½	A60-702	BW-½-120	Br.-Red-Br. Output Cathode
27	12KΩ	2	A60-720	BT-2-12K	Br.-Red-Or. Bias
28	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl. Line Isolation
29	1000Ω	2	A60-699	BT-2-1000	Br.-Blk.-Red Filter
30	27Ω	1	A60-721	BW-1-27	Red-Vi.-Blk. Surge Limiter
31	940Ω		A60-719		Line Dropping-See Note

Note: This is a special compensating resistor, measuring 940Ω cold and 206Ω hot. Order only from manufacturer.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CLARION PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
32	3000Ω	3.0Ω	300Ω	.8Ω	B80-230	A-3876	T22S45		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CLARION PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107*		*Drill and tap magnet frame.
33	PM	3.0Ω	B79-352	Mod. P5-V		
	CONE DIA.	VC DIA.				
34	$4\frac{1}{2}$"	$\frac{1}{2}$"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

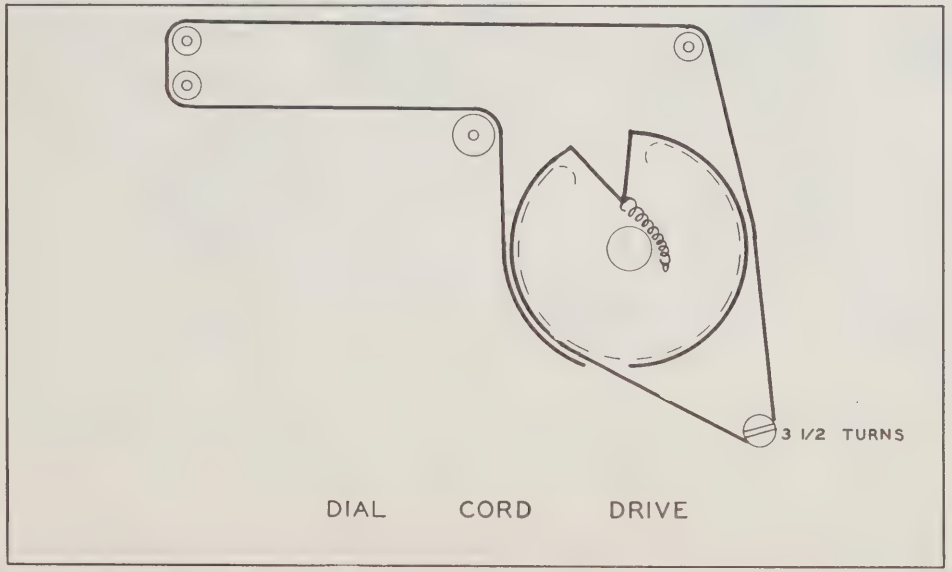
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CLARION PART No.	MEISSNER PART No.	
35	Loop Ant.		1.5Ω	C82-43		
36	Osc. Coil	1Ω	6Ω	B10-411	14-1040	
37	Input IF	37Ω	33Ω	A10-468	16-6658	
38	Output IF	39Ω	37Ω	B10-454	16-6660	

DIAL LIGHT

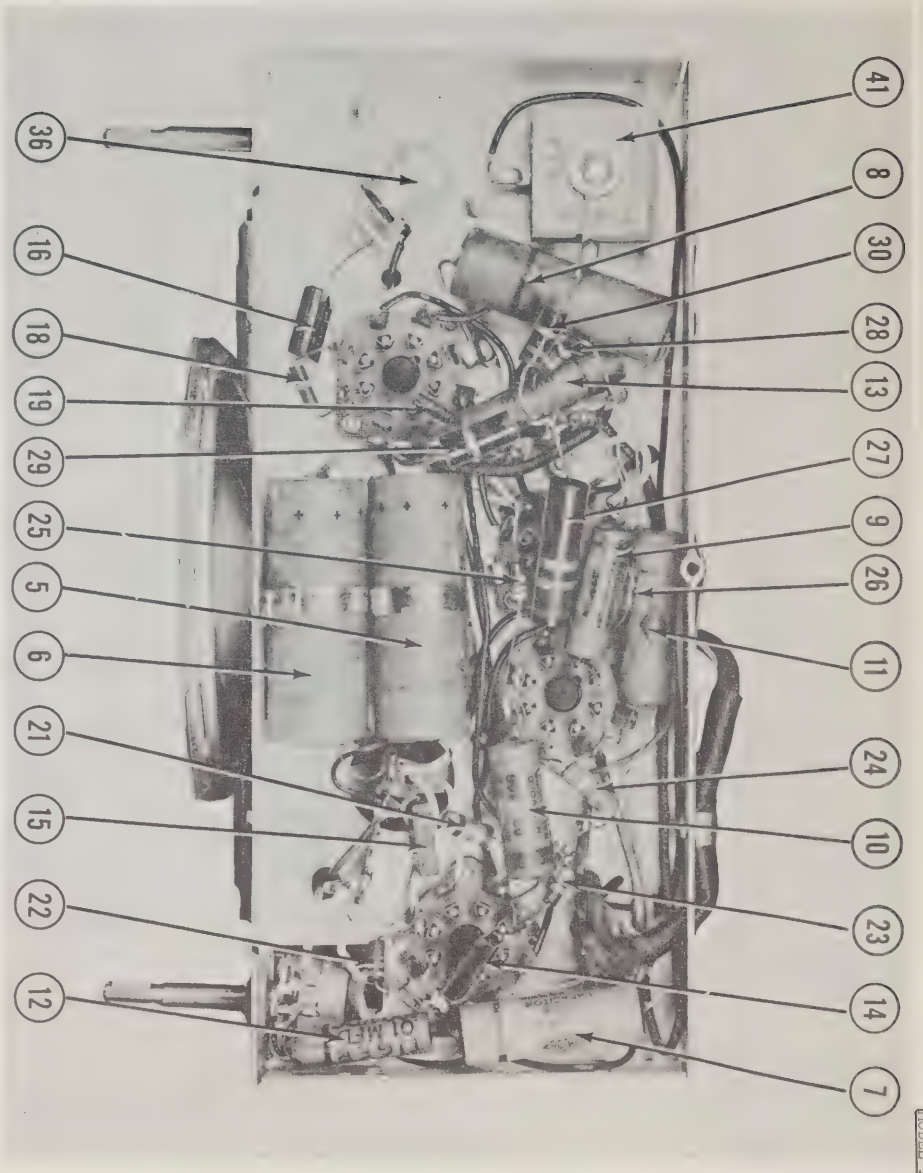
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CLARION PART No.		
39	Bayonet	6.3	0.15	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	CLARION PART No.	NOTES
40	Radio-Phono Sw.	A69-172	
41	Rectifier	A83-391	Selenium
42	2 Gang Var. Cap	B19-189	28-474 MMF, 28-191 MMF
	Dial Scale	B57-496	
	Dial Pointer	A56-53	

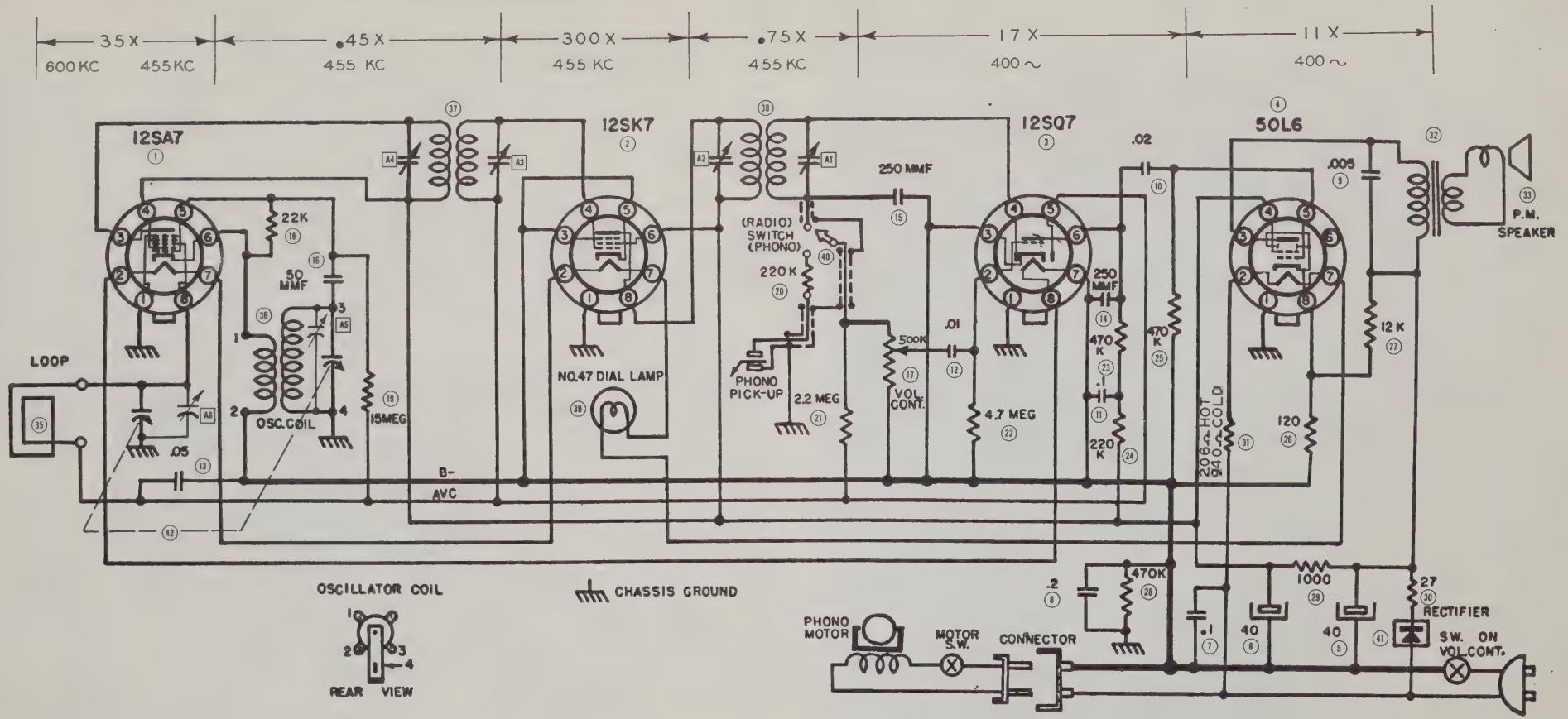


CHASSIS—BOTTOM VIEW



CLARION MODEL 11305

CLARION MODEL 11305



IF=455KC

RADIO-PHONO SWITCH IN PHONO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	12V.AC	105V.DC	105V.DC	-5.8V.DC	0V.	24V.AC	155V.DC
2	12SK7	0V.	24V.AC	0V.	55V.DC	0V.	105V.DC	40V.AC	105V.DC
3	12SQ7	0V.	57V.DC	0V.	32V.DC	55V.DC	40V.DC	12V.AC	0V.
4	50L6GT	0V.	90V.AC	123V.DC	105V.DC	0V.	0V.	40V.AC	6.6V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	460 KΩ	11Ω	10 KΩ	10 KΩ	20 KΩ	.5Ω	23Ω	1.9MEG
2	12SK7	460 KΩ	23Ω	0Ω	1.9MEG	0Ω	10 KΩ	35Ω	10 KΩ
3	12SQ7	460 KΩ	4.5MEG	0Ω	490 KΩ	1.9 MEG	675 KΩ	11Ω	0Ω
4	50L6GT	460 KΩ	78Ω	10 KΩ	10 KΩ	400 KΩ	.1 MF.	35Ω	110Ω

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

478-11

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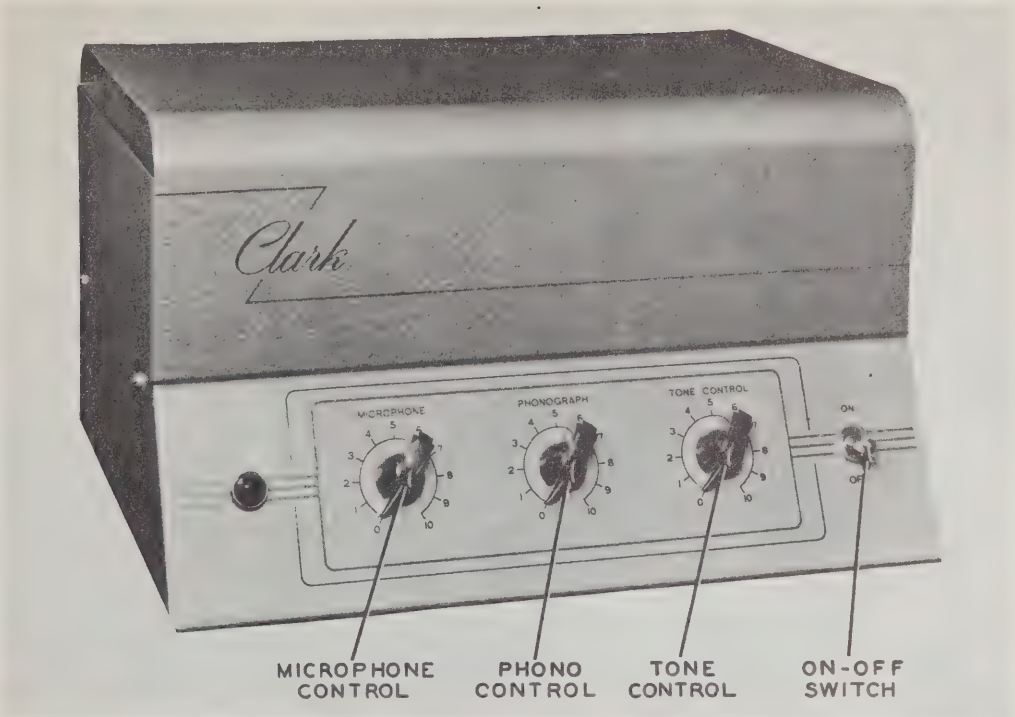
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



CLARK
MODEL PA-10A

CLARK
MODEL PA-10A

CLARK MODEL PA-10A

TRADE NAME	Clark, Model PA-10A
MANUFACTURER	Clark Radio Equipment Corp., 4313 N. Lincoln Ave., Chicago 18, Ill.
TYPE SET	Two Channel - Six Tube Amplifier
TUBES (SIX)	Types, 6SJ7 Mike Amp., 6SJ7 Audio Amp., 6J5GT/G Phase Inverter, (2) 6V6GT/G Power Output, 5Y3GT/G Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .700 Amp. @ 117 Volts AC

NOTE: VOLTAGE AND RESISTANCE TAKEN WITH MICROPHONE PHONOGRAPH TONE CONTROL SET AT MAXIMUM

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SJ7	0V.	3.3V.AC	.8V.DC	0V.	.8V.DC	20V.DC	3.3V.AC	84V.DC
2	6SJ7	0V.	3.3V.AC	1.45V.DC	0V.	1.45V.DC	35V.DC	3.3V.AC	105V.DC
3	6J5GT/G	0V.	3.3V.AC	190V.DC	0V.	105V.DC	0V.	3.3V.AC	110V.DC
4	6V6GT/G	0V.	3.3V.AC	320V.DC	320V.DC	0V.	0V.	3.3V.AC	20V.DC
5	6V6GT/G	0V.	3.3V.AC	320V.DC	320V.DC	0V.	320V.DC	3.3V.AC	20V.DC
6	5Y3GT	0V.	340V.DC	0V.	328V.AC	0V.	328V.AC	0V.	340V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SJ7	0Ω	.1Ω	850Ω	2MEG.	850Ω	1.3MEG.	.1Ω	390KΩ
2	6SJ7	0Ω	.1Ω	850Ω	360KΩ	850Ω	1.3MEG.	.1Ω	325KΩ
3	6J5GT/G	0Ω	.1Ω	160KΩ	INF.	325KΩ	INF.	.1Ω	45KΩ
4	6V6GT/G	0Ω	.1Ω	110KΩ	110KΩ	480KΩ	INF.	.1Ω	245Ω
5	6V6GT/G	0Ω	.1Ω	110KΩ	110KΩ	480KΩ	110KΩ	.1Ω	245Ω
6	5Y3GT	0Ω	110KΩ	INF.	90Ω	INF.	95Ω	INF.	110KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

CLARK MODEL PA-10A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CLARK PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. Amp.	6SJ7	6SJ7	8N	
2	Audio	6SJ7	6SJ7	8N	
3	Phase Inverter	6J5GT/G	6J5GT/G	6Q	
4	Power Output	6V6GT/G	6V6GT/G	7AC	
5	Power Output	6V6GT/G	6V6GT/G	7AC	
6	Rectifier	5Y3GT/G	5Y3GT/G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CLARK PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	400		AF44J4A	UP6BJ38	FP339	DY-312	EL-350	■ Filter
B	20	400							▲ "
C	20	25			BR202A				Cath. Bypass
8A	20	400		AF44J4A	UP6BJ38	FP339	DY-312	EL-350	■ Filter
B	20	400							▲ "
C	20	25			BR202A				Bias Filter
9	16	150		PRS150-16	BR1615	TC44	M-16-150	UT-161	Mic. Amp. Cath. Bypass
10	.05	600		684-05	DT6S5	TP415	S-6-05	TC-15	Audio Coupling
11	.05	600		684-05	DT6S5	TP415	S-6-05	TC-15	" "
12	.001	600		684-001	DT6D1	TP404	S-6-001	TC-21	Tone Compensation
13	.05	600		684-05	DT6S5	TP415	S-6-05	TC-15	Audio Screen Bypass
14	.02	400		484-02	DT4S2	TP423	S-4-02	TC-12	Audio Coupling
15	.05	600		684-05	DT6S5	TP426	S-6-05	TC-15	Mic. Amp. Screen Bypass

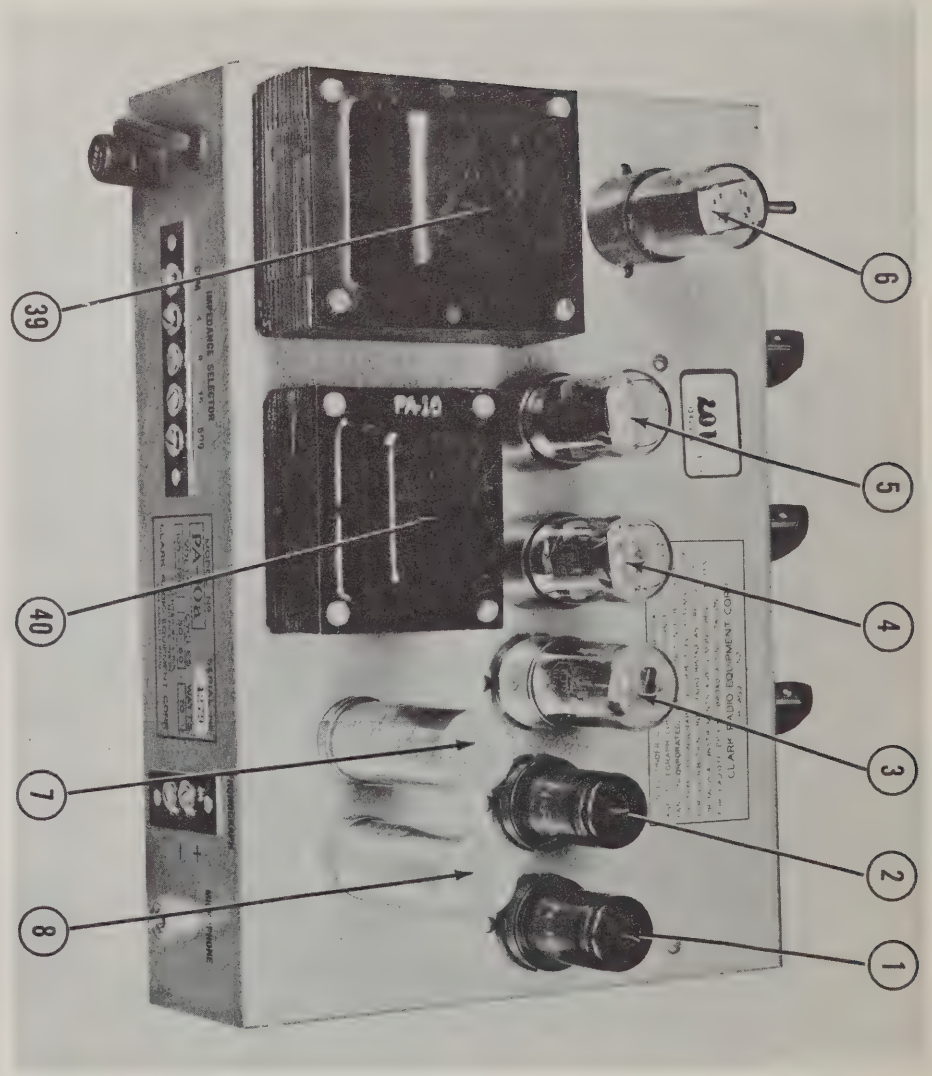
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CLARK PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	500KΩ	1		MR48	D13-133	M-60-Z	Mike Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 16A per instructions
17A	500KΩ	1		MR48	D13-133	M-60-Z	Phono Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 17A per instructions
18A	1 Meg.	1		MR53	D13-137	M-63-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 18A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CLARK PART No.	IRC PART No.	IDENTIFICATION CODES
19	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Microphone Amplifier Grid
20	1000Ω	½		BTS-1000	Br.-Blk.-Red Microphone Amplifier Cathode
21	1.2 Meg.	½		BTS-1.2 Meg.	Br.-Red-Grn. Microphone Amplifier Screen Dropping
22	220KΩ	½		BTS-220K	Red-Red-Yl. Microphone Amplifier Plate Load
23	220KΩ	½		BTS-220K	Red-Red-Yl. Isolation
24	220KΩ	½		BTS-220K	Red-Red-Yl. "
25	510Ω	½		BTS-470	Grn.-Br.-Br. AF Cathode
26	1000Ω	½		BTS-1000	Br.-Blk.-Red AF Cathode
27	1.2 Meg.	½		BTS-1.2 Meg.	Br.-Red-Grn. AF Screen Dropping
28	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
29	1.2 Meg.	½		BTS-1.2 Meg.	Br.-Red-Grn. Phase Inverter Grid
30	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Phase Inverter Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CLARK PART No.	IRC PART No.	
31	47KΩ	½		BTS-47K	Yl.-Vl.-Or. Phase Inverter Plate Load
32	510KΩ	½		BTS-470K	Grn.-Br.-Yl. Output Grid
33	510KΩ	½		BTS-470K	Grn.-Br.-Yl. " "
34	250Ω	10		AB-250	Output Cathode
35	250Ω	10		AB-250	Surge Limiter
36	2700Ω	½		BTS-2700	Red-Vl.-Red Filter
37	47KΩ	½		BTS-47K	Yl.-Vl.-Or. "
38	510KΩ	½		BTS-470K	Grn.-Br.-Yl. Feedback

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CLARK PART No.	STANCOR PART No.	THORDARSON PART No.	
39	117V AC @ .7A	680V CT @ .08A	5.1V AC @ 1.8A	6.6V AC @ 1.9A		P-6013	T22R06	

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CLARK PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
40	8000Ω CT	4Ω 8Ω 15Ω 500Ω	250Ω CT	.3Ω .4Ω .6Ω 24Ω		A-3304*	T22R06*		*Drill new mounting holes.

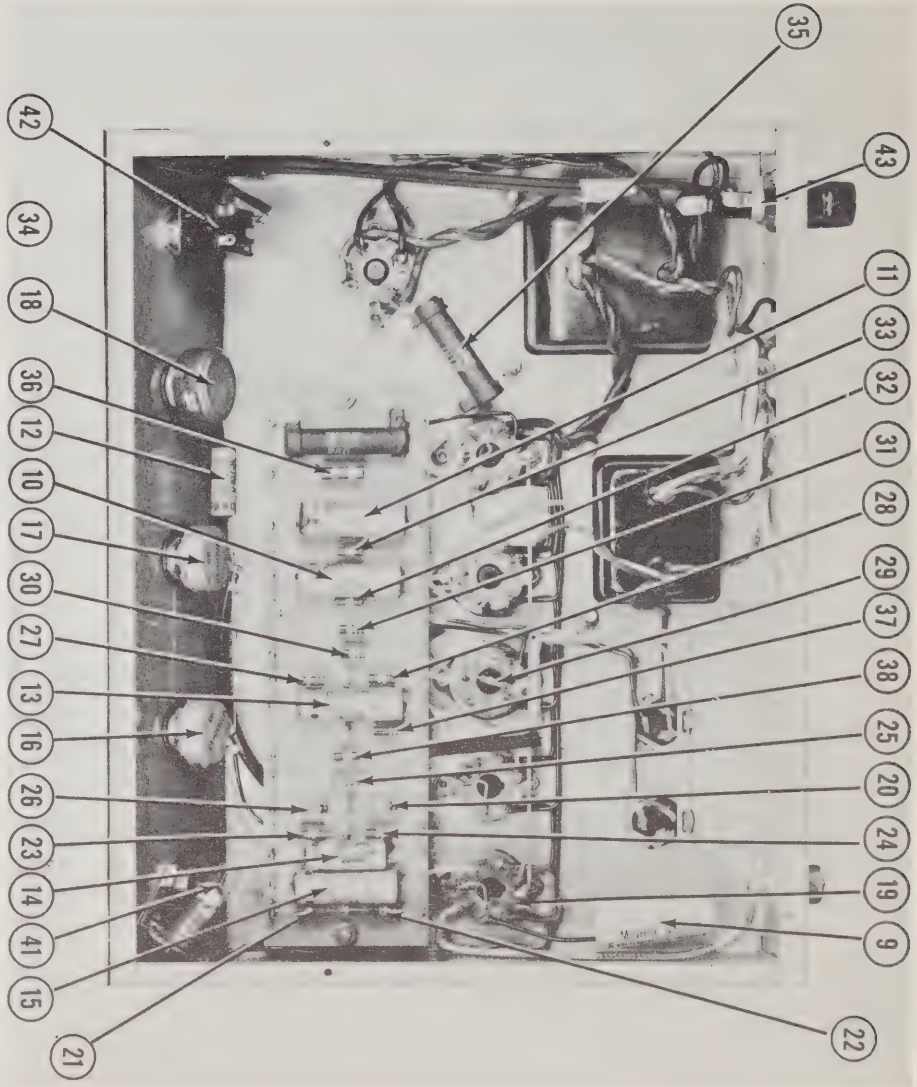
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CLARK PART No.		
41	Bayonet	6.3	0.15	Brown			Type 47

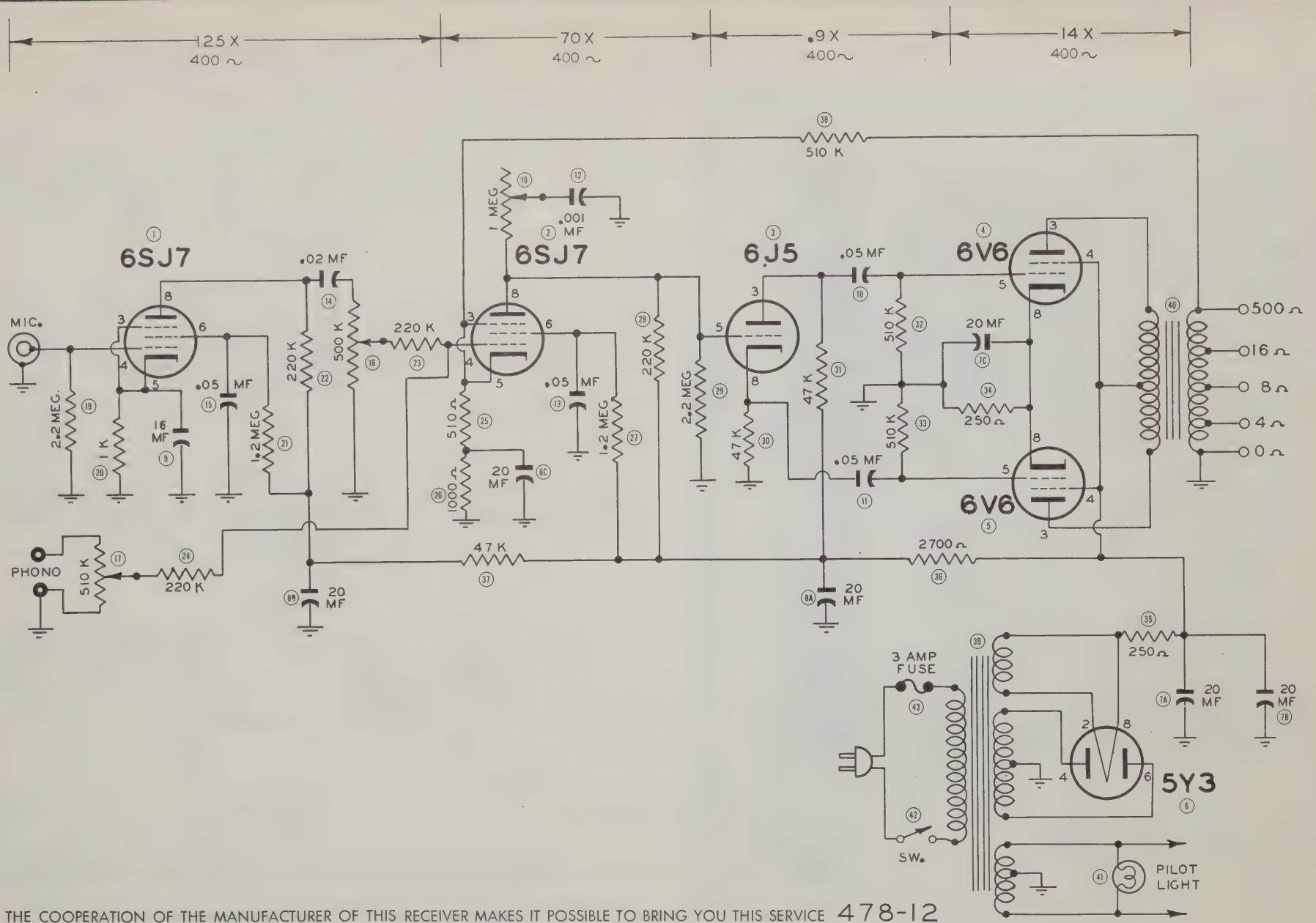
MISCELLANEOUS

ITEM No.	PART NAME	CLARK PART No.	NOTES
42	Switch		On-Off SPST
43	Fuse		3 Amp.

CHASSIS—BOTTOM VIEW



CLARK MODEL PA-10A



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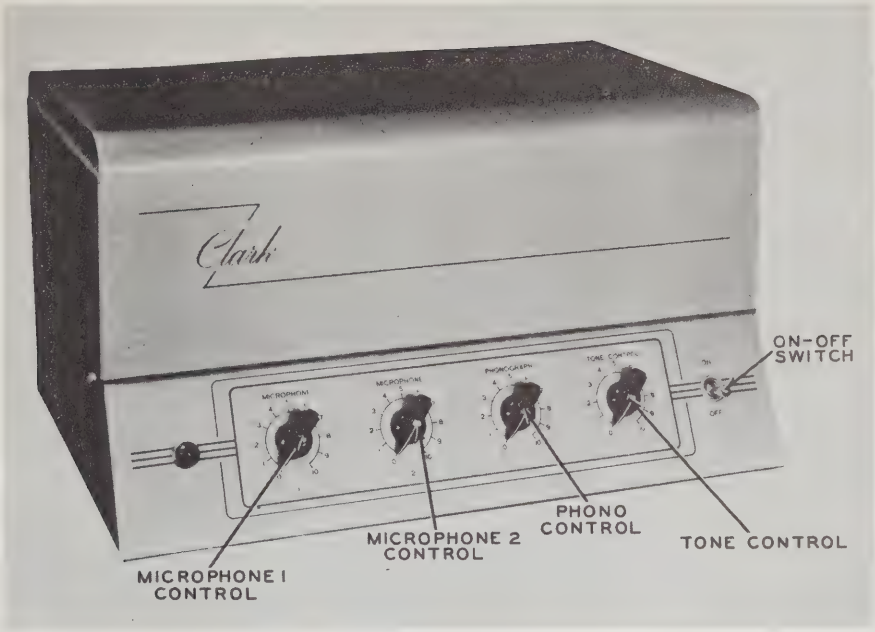

CLARK MODEL PA-20A

TRADE NAME	Clark, Model PA-20A
MANUFACTURER	Clark Radio Equipment Corp., 4313 N. Lincoln Ave., Chicago 40, Ill.
TYPE SET	AC Operated 3 Channel - Seven Tube Amplifier
TUBES (SEVEN)	Types, 6SJ7 1st Mic. Amp., 6SJ7 2nd Mic. Amp., 6SJ7 Mixer-AF Amp., 6J5GT/G Phase Inverter, (2) 6L6GA Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC RATING 1.25 Amp. @ 117 Volts AC

VOLTAGE AND RESISTANCE TAKEN WITH TONE CONTROL AT TREBLE AND OTHER CONTROLS AT MAXIMUM

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SJ7	0V.	3.2V.AC	.65V.DC	-.2V.DC	.65V.DC	9.4V.DC	3.2V.AC	165V.DC
2	6SJ7	0V.	3.2V.AC	.65V.DC	-.2V.DC	.65V.DC	9.4V.DC	3.2V.AC	185V.DC
3	6SJ7	0V.	3.2V.AC	1V.DC	.1V.DC	1V.DC	2.9V.DC	3.2V.AC	122V.DC
4	6J5GT/G	0V.	3.2V.AC	200V.DC	0V.	40V.DC	0V.	3.2V.AC	118V.DC
5	6L6GA	0V.	3.2V.AC	448V.DC	380V.DC	0V.	0V.	3.2V.AC	28V.DC
6	6L6GA	0V.	3.2V.AC	448V.DC	380V.DC	0V.	0V.	3.2V.AC	28V.DC
7	5U4G	0V.	460V.DC	0V.	390V.AC	0V.	390V.AC	0V.	460V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SJ7	0Ω	.1Ω	400Ω	1.2MEG.	400Ω	1.2MEG.	.1Ω	150KΩ
2	6SJ7	0Ω	.1Ω	400Ω	1.2MEG.	400Ω	1.2MEG.	.1Ω	150KΩ
3	6SJ7	0Ω	.1Ω	800Ω	340KΩ	800Ω	1.2MEG.	.1Ω	230KΩ
4	6J5GT/G	0Ω	.1Ω	70KΩ	INF.	1.2MEG.	INF.	.1Ω	45KΩ
5	6L6GA	0Ω	.1Ω	20KΩ	20KΩ	210KΩ	INF.	.1Ω	190Ω
6	6L6GA	0Ω	.1Ω	20KΩ	20KΩ	210KΩ	INF.	.1Ω	190Ω
7	5U4G	INF.	20KΩ	INF.	65Ω	INF.	60Ω	INF.	20KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

CLARK MODEL PA-20A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CLARK PART No.	STANDARD REPLACEMENT		
1	Mic. 1 Amp.		6SJ7	8N	
2	Mic. 2 Amp.		6SJ7	8N	
3	Mixer-AF Amp.		6SJ7	8N	
4	Phase Inverter		6J5GT/G	6Q	
5	Power Output		6L6GA	7AC	
6	Power Output		6L6GA	7AC	
7	Rectifier		5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CLARK PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	
8	40	450		AF8J	UP4045	FP146	DY-40-450	EL-4	Filter
9A	40	400		AF44J†	UP2245C†	FP339†	DY-312†	EL-350†	"
B	20	25		PRS25-20					Cath. Bypass
10A	20	400		AF44J	UP2245C	FP339	DY-312	EL-350	■ Filter
B	20	400							▲ "
C	20	25		PRS25-20					Cath. Bypass
11	12	50		PRS50-10	BR105	TC32	M-10-50	TA-510	" "
12	.05	600		684-05	DT6S5	TP415	S-6-05	TC-15	Audio Coupling
13	.05	600		684-05	DT6S5	TP415	S-6-05	TC-15	" "
14	.05	600		684-05	DT6S5	TP415	S-6-05	TC-15	" "
15	.002	600		684-002	DT6D2	TP405	S-6-002	TC-22	Tone Compensation
16	.05	600		684-05	DT6S5	TP415	S-6-05	TC-15	Audio Screen Bypass
17	.02	600		684-02	DT6S2	TP412	S-6-02	TC-12	Audio Coupling
18	.02	600		684-02	DT6S2	TP412	S-6-02	TC-12	" "
19	.1	400		484-.1	DT4P1	TP428	S-4-1	TC-1	Mic. Amp. Screen Bypass

†Parallel two 20MFD sections for 40MFD.

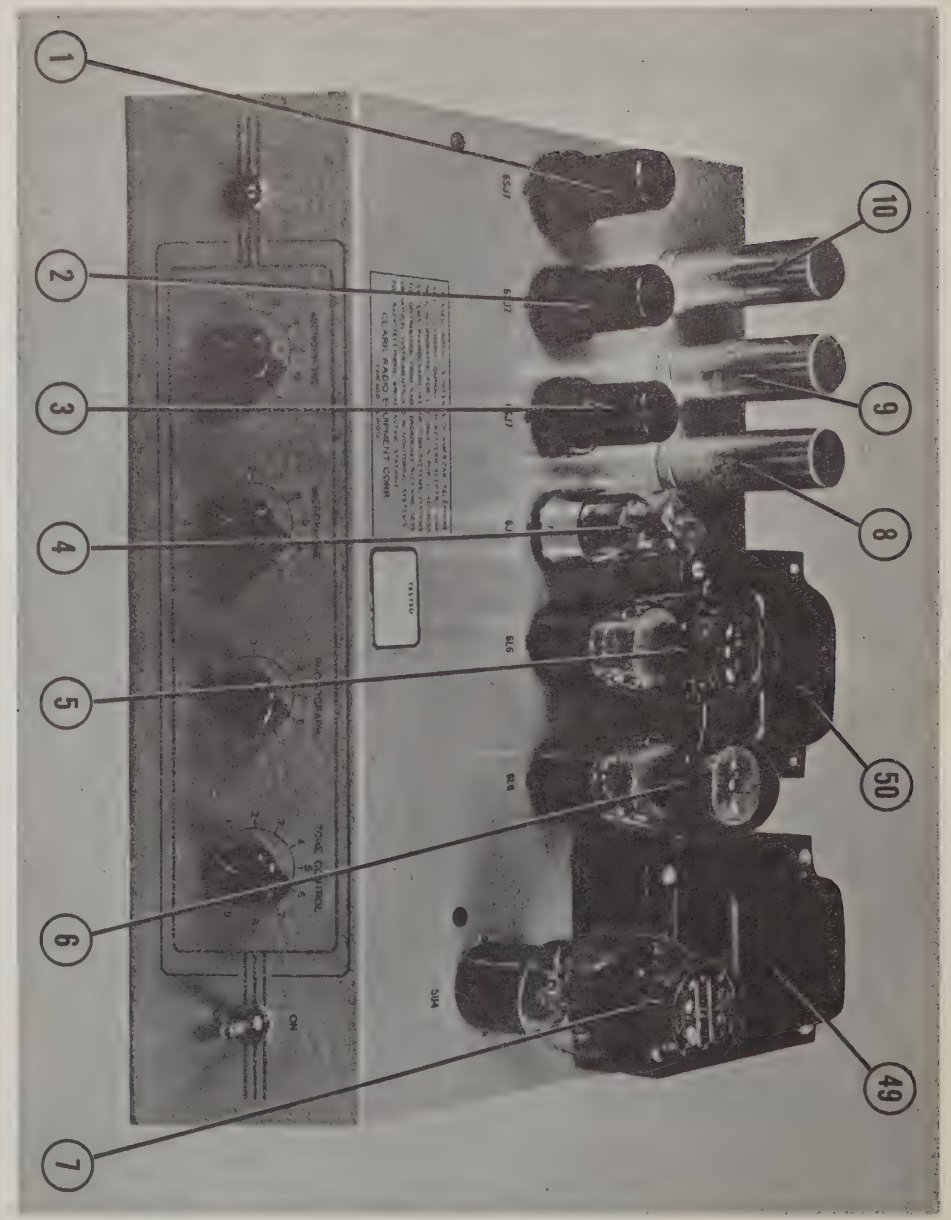
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CLARK PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
20A	500KΩ	1		MR48	D13-133	M-60-Z	Mike 1-Control
B	Shaft			Not Req.	A	Not Req.	Attach to 20A per instructions
21A	500KΩ	1		MR48	D13-133	M-60-Z	Mike 2-Control
B	Shaft			Not Req.	A	Not Req.	Attach to 21A per instructions
22A	500KΩ	1		MR48	D13-133	M-60-Z	Phono Control
B	Shaft			Not Req.	A	Not Req.	Attach to 22A per instructions
23A	1 Meg.	1		MR53	D13-137	M-63-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 23A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CLARK PART No.	IRC PART No.	
24	1.2 Meg.	½		BTS-1.2 Meg.	Br.-Red-Grn. 1st Mic. Amplifier Grid
25	1.2 Meg.	½		BTS-1.2 Meg.	Br.-Red-Grn. 2nd Mic. Amplifier Grid
26	510Ω	½		BTS-470	Grn.-Br.-Br. Mic. Amplifier Cathode
27	1.2 Meg.	½		BTS-1.2 Meg.	Br.-Red-Grn. Mic. Amplifier Screen Dropping
28	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 1st Mic. Amplifier Plate Load
29	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd Mic. Amplifier Plate Load

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CLARK PART No.	IRC PART No.	
30	510KΩ	½		BTS-470K	Grn.-Br.-Yl. Isolation
31	510KΩ	½		BTS-470K	Grn.-Br.-Yl. "
32	510KΩ	½		BTS-470K	Grn.-Br.-Yl. "
33	510Ω	½		BTS-470	Grn.-Br.-Br. AF Cathode
34	510Ω	½		BTS-470	Grn.-Br.-Br. " "
35	1.2 Meg.	½		BTS-1.2 Meg.	Br.-Red-Grn. AF Screen Dropping
36	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
37	1.2 Meg.	½		BTS-1.2 Meg.	Br.-Red-Grn. Phase Inverter Grid
38	1000Ω	½		BTS-1000	Br.-Blk.-Red Phase Inverter Cathode
39	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Phase Inverter Cathode
40	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Phase Inverter Plate Load
41	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
42	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
43	200Ω	10		AB-200	Output Cathode
44	10KΩ	10		AB-10K	Filter
45	10KΩ	1		BTA-10K	Br.-Blk.-Or. "
46	47KΩ	½		BTS-47K	Yl.-Vi.-Or. "
47	20KΩ	10		AB-20K	Bleeder
48	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Feedback

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CLARK PART No.	STANCOR PART No.	THORDARSON PART No.	
49	117V AC @ 1.25A	780V CT @ .155A	5.0V AC @ 3.1A	6.4V AC @ 3.1A				

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CLARK PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
50	7000Ω CT	4Ω 8Ω 15Ω 500Ω	120Ω CT	.25Ω .4Ω .6Ω 17Ω		A-3801*	T22S68*		*Drill new mounting holes.

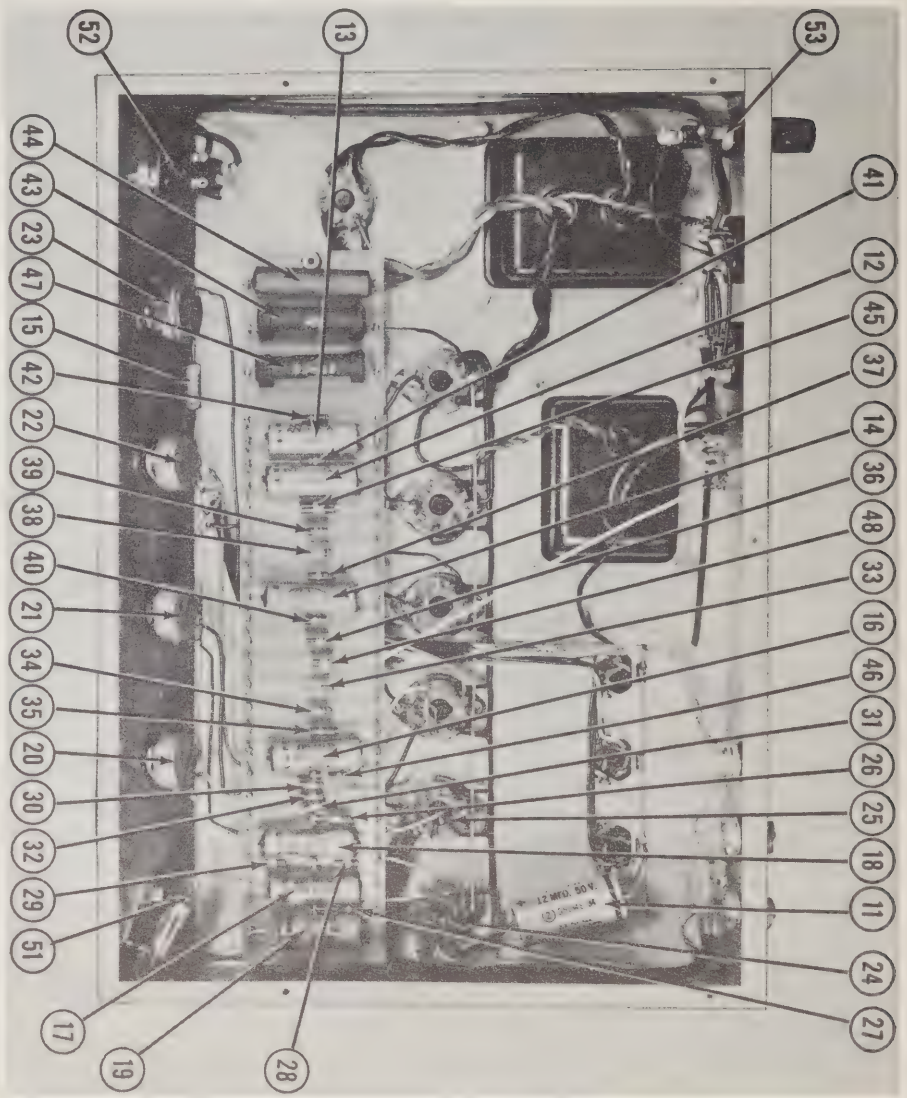
DIAL LIGHT

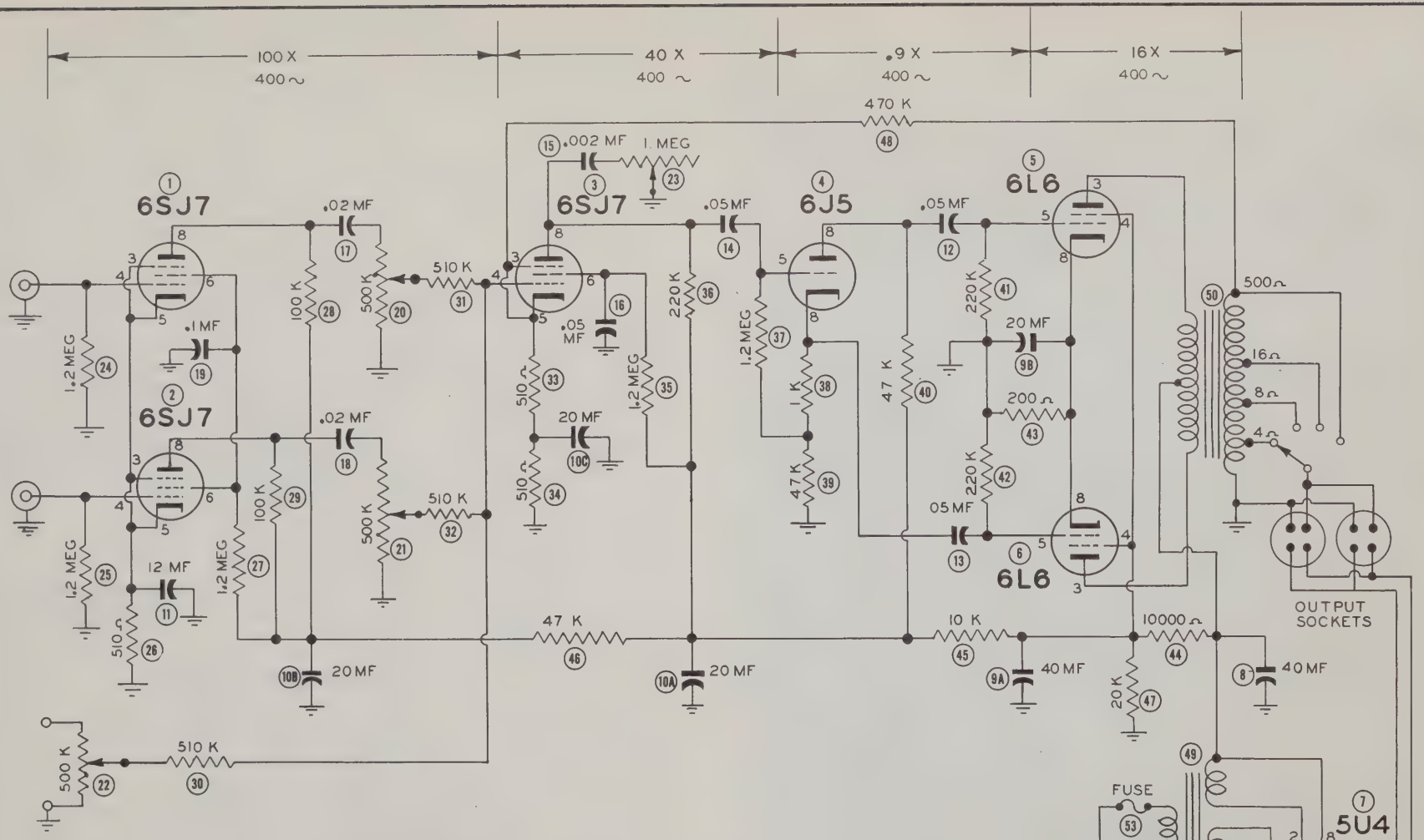
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CLARK PART No.		
51	Bayonet	6.3	0.15	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	CLARK PART No.	NOTES
52	On-Off Switch		
53	Fuse		3 Amp.

CHASSIS—BOTTOM VIEW





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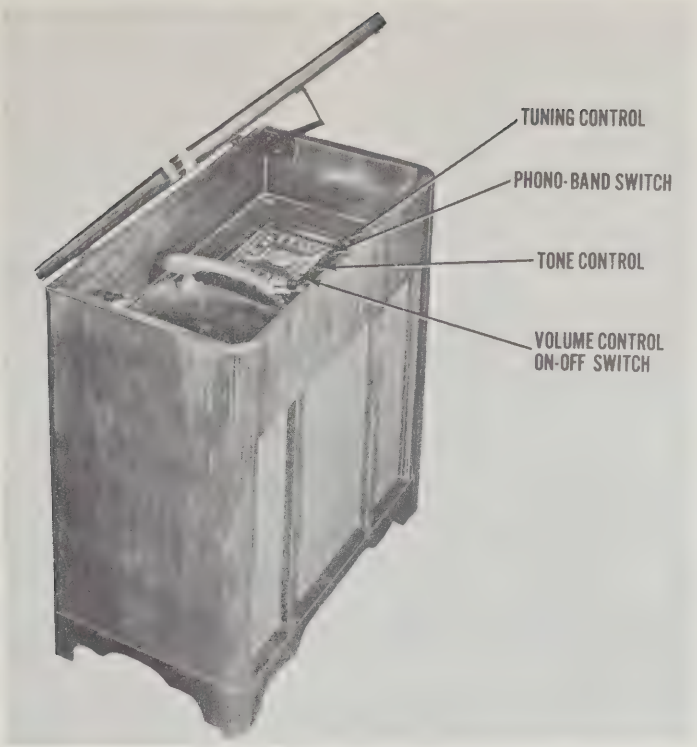
CROSLEY
MODELS 66 CS, 66 CSM



CROSLEY MODEL 66CS

TRADE NAME	Crosley, Models 66CS, 66CSM
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne with Loop Antenna
TUBES (SIX)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7GT Det.-AVC-AF, 6V6GT/G Power Output, 5Y3GT/G Rectifier.
POWER SUPPLY	105-125 Volts AC — RATING .550 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC — SHORT WAVE 5.8-15MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
200MMFD.	High side to ext. ant. lug. Low side to chassis.	455KC	BC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
200MMFD.	"	455KC	"	"	"	A5	Adjust for minimum output
400Ω	"	15.3MC	SW	"	"	A6	Tighten trimmer firmly. Then loosen until second peak is obtained. Adjust for maximum output.
400Ω	"	15MC	"	Tune for maximum output.	"	A7	Rock tuning cap and adjust for maximum output.
200MMFD	"	1620KC	BC	Tuning cap. fully open.	"	A8	Adjust for maximum output
200MMFD.	"	1400KC	"	Tune for maximum output.	"	A9	Reinstall in cabinet, and connect loop ant. Adjust for maximum output.
200MMFD.	"	600KC	"	"	"	A10	Adjust for maximum output Repeat last two steps.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove speaker plug from chassis.
3. Remove phono-motor plug from receptacle.
4. Remove phono-pickup leads from terminal strip on chassis.
5. Remove loop antenna leads from terminal strip on chassis.
6. Remove four hex nuts holding speaker. Remove speaker.
7. Remove four Phillips head chassis mounting screws. Remove chassis.
8. Remove two self-tapping screws holding bottom cover plate on chassis. Remove cover plate.

HOWARD W. SAMS & CO., INC. Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

CROSLEY MODELS 66CS, 66CSM

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Power Output	6V6GT/G	6V6GT/G	7AC	
6	Rectifier	5Y3GT/G	5Y3GT/G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CROSLEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	360	B-132807		UP9DJ56	FP444†	DY-404†	UT-203	Filter - Red
B	20	275						EL-333†	" - Blue
C	20	245							" - Green
D	20	25							Cath. Bypass - Yellow
8	.01	400	W-30805	484-01	DT4S1	TP421	S-4-01	TC-11	Line Bypass
9	.005	600	39001-11	684-005	DT6D5	TP408	S-6-005	TC-25	Output Plate Bypass
10	.01	400	39001-37	484-01	DT4S1	TP421	S-4-01	TC-11	Audio Coupling
11	.005	600	39001-11	684-005	DT6D5	TP408	S-6-005	TC-25	" "
12	.005	600	39001-11	684-005	DT6D5	TP408	S-6-005	TC-25	Tone Compensation
13	.01	200	39001-61	484-01	DT4S1	TP421	S-4-01	TC-11	" "
14	.05	200	39001-65	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
15	.05	400	39001-41	484-05	DT4S5	TP426	S-4-05	TC-15	Screen Bypass
16	.05	400	39001-41	484-05	DT4S5	TP426	S-4-05	TC-15	Plate Decoupling
17	220	500	39004-9	1468-0002	5W5T2	MC237	MO.5-322	1FM-32	Output Grid Filter
18	50	500	39004-5	1468-00005	5W5J5	MC225	MO.5-45	1FM-45	IF Bypass Vol. Cont.
19	50	500	39004-5	1468-00005	5W5J5	MC225	MO.5-45	1FM-45	RF Coupling
20	220	500	39004-9	1468-0002	5W5T2	MC237	MO.5-322	1FM-32	" "
21	220	500	39004-9	1468-0002	5W5T2	MC237	MO.5-322	1FM-32	Osc. Grid Capacitor
22	580	500	GC21065143						Fixed Padder
23	220	500	39004-9	1468-0002	5W5T2	MC237	MO.5-322	1FM-32	RF Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
24A	1 Meg.	1	B-135659	MRT440	D13-137X	T-109	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 24A per instructions
C	Switch		" "	M26	41	SW-A	" " " "
25A	3 Meg.	1	B-135651	MR57	D13-140	M-67-Z	Tone Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 25A per instructions

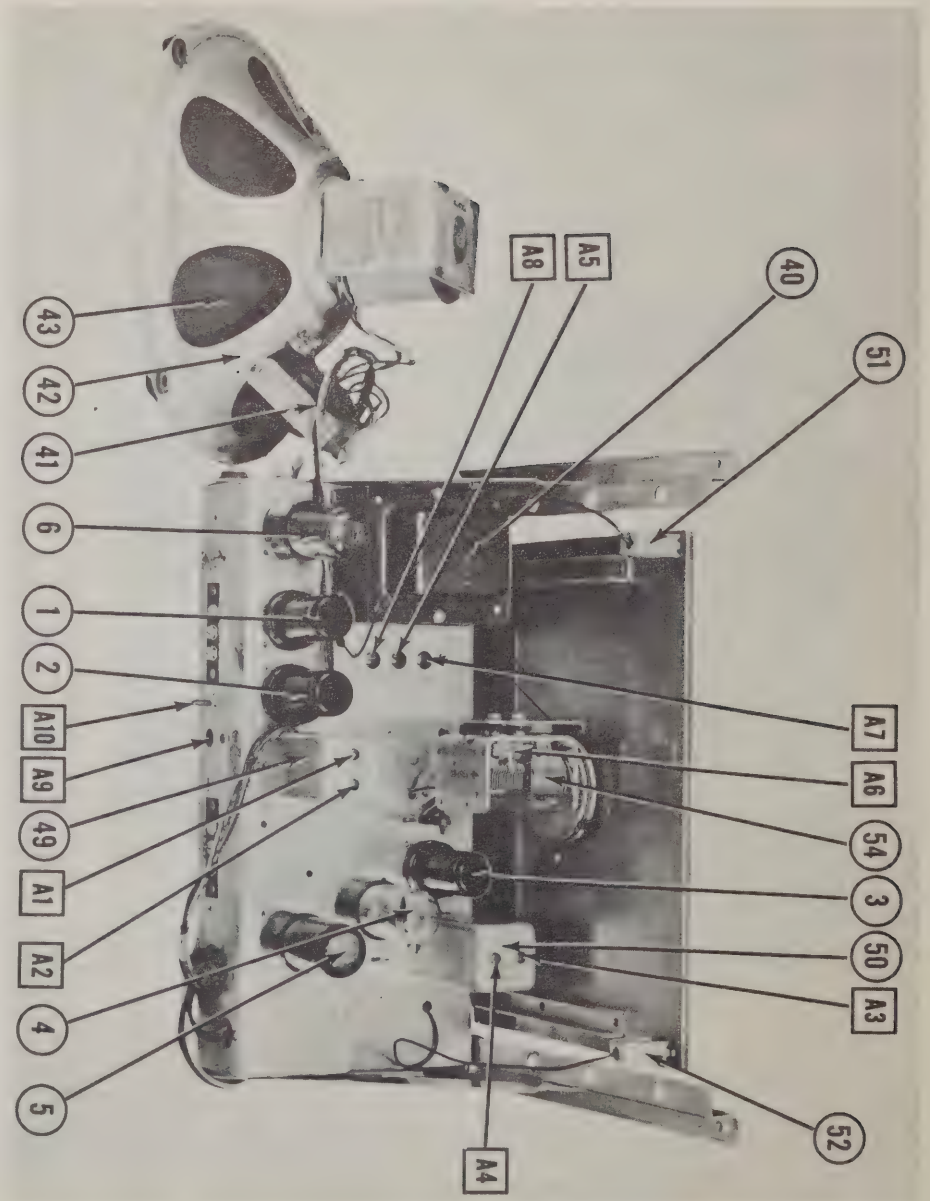
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	IRC PART No.	IDENTIFICATION CODES
26	3300Ω	½	39281-16	BTS-3300	Or.-Or.-Red RF Plate Load
27	2.2 Meg.	½	39281-33	BTS-2.2 Meg.	Red-Red-Grn. RF Grid
28	22KΩ	½	39281-21	BTS-22K	Red-Red-Or. Oscillator Grid
29	22KΩ	½	39281-21	BTS-22K	Red-Red-Or. Converter Grid
30	12KΩ	2	39016-38	BT-2-12K	Br.-Red-Or. Screen Dropping
31	1000Ω	1	39040-13	BTS-1000	Br.-Blk.-Red Filter
32	100KΩ	½	39281-25	BTS-100K	Br.-Blk.-Yl. Diode RF Filter
33	2.2 Meg.	½	39281-33	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
34	33KΩ	½	39281-22	BTS-33K	Or.-Or.-Or. Tone Compensation
35	5 Meg.	½	39281-35	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
36	330KΩ	½	39281-28	BTS-330K	Or.-Or.-Yl. AF Plate Load
37	470KΩ	½	39281-29	BTS-470K	Yl.-Vi.-Yl. Output Grid
38	330Ω	1	39015-19	Bk-1-330	Or.-Or.-Br. Output Cathode
39	2200Ω	½		BTS-2200	Red-Red-Red Decoupling

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: CROSLEY PART No.	STANCOR PART No.	THORDARSON PART No.	INSTALLATION NOTES
40	117V AC @ .55A	620V CT @ .06A	5.0V AC @ 1.9A	6.3V AC @ 1.1A	B-134025	P-8120*	T22R02*	*Mount vertically with universal mounting brackets.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CROSLEY PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
41	5000Ω	3.5Ω	380Ω	.5Ω	Part of B-134700	A-3852	T2S58		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CROSLEY PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.				
42	950Ω	3.5Ω	B-134700	ST-17S Mod. F10-S		Replace output transformer to match 8Ω voice coil.
	CONE DIA.	VC DIA.				
43	9½"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

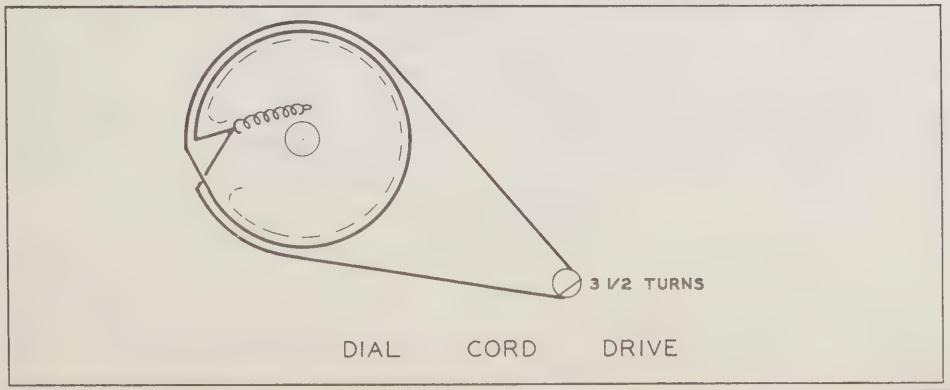
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CROSLEY PART No.	MEISSNER PART No.	
44	Loop Ant.			AC-134782		
45	BC Ant.Coil	63Ω	3Ω	AW-135910		
46	SW Ant.Coil	.3Ω	.2Ω	AW-135909	14-1044	
47A	Peaking Coil		3Ω	AW-135907		Items 47A & 47B wound on same form.
B	Wave Trap		33Ω			
48A	BC Osc. Coil		6Ω	AW-135908		" 48A & 48B " " " "
B	SW Osc. Coil		.1Ω			
49	Input IF	22.3Ω	19.5Ω	AW-134065	16-6658	
50	Output IF	27Ω		AW-134158	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CROSLEY PART No.		
51	Bayonet	7.5	0.20	White	W-43567		Type 51
52	"	"	"	"	"		"

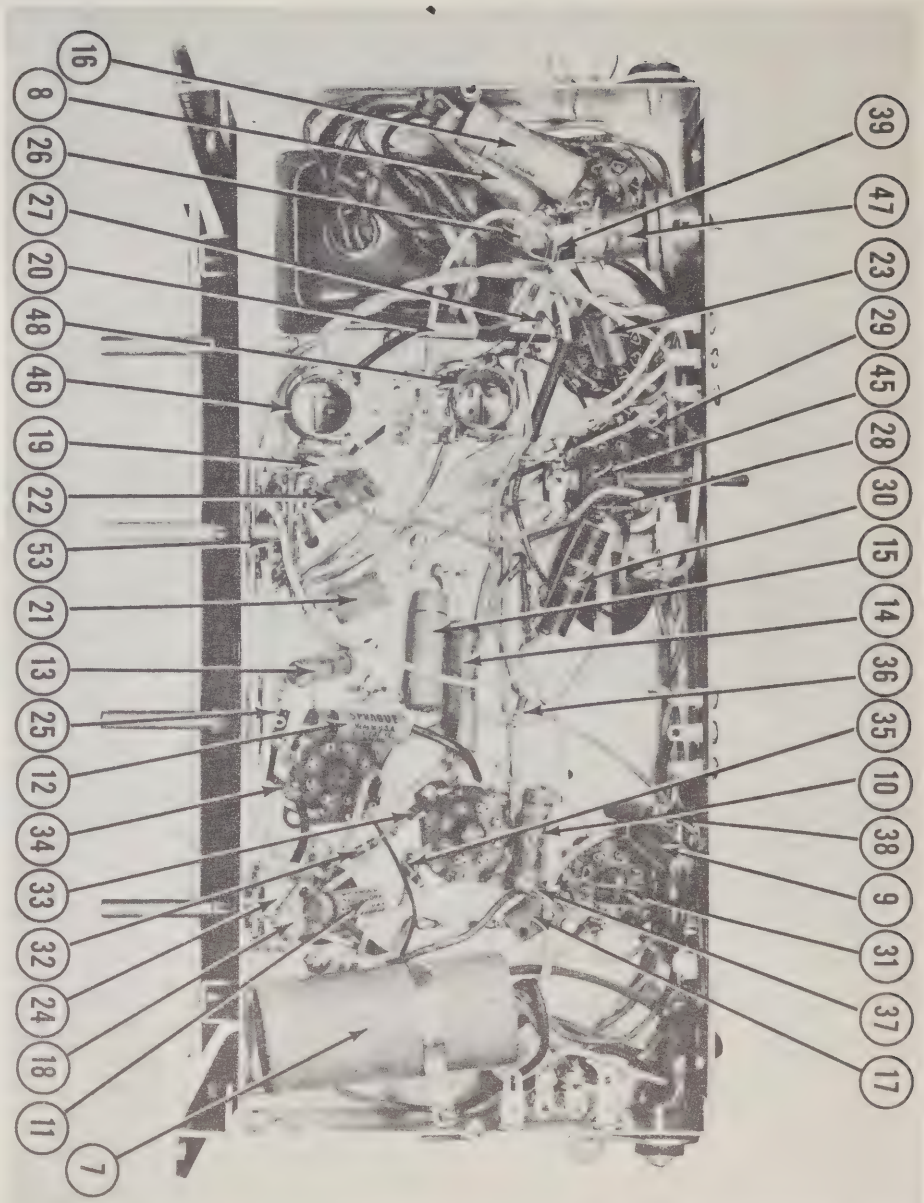
MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
53	Switch		Band-Phono
54	2 Gang Var. Cap	B-134995	17-455MMF, 19-258MMF
A5	Trimmer Strip	B-132386-7	Wave Trap Adj.
A7			SW Ant. Adj.
A8			BC Osc. Adj.
	Dial Pointer	B-134571	
	Dial Glass	C-134773	



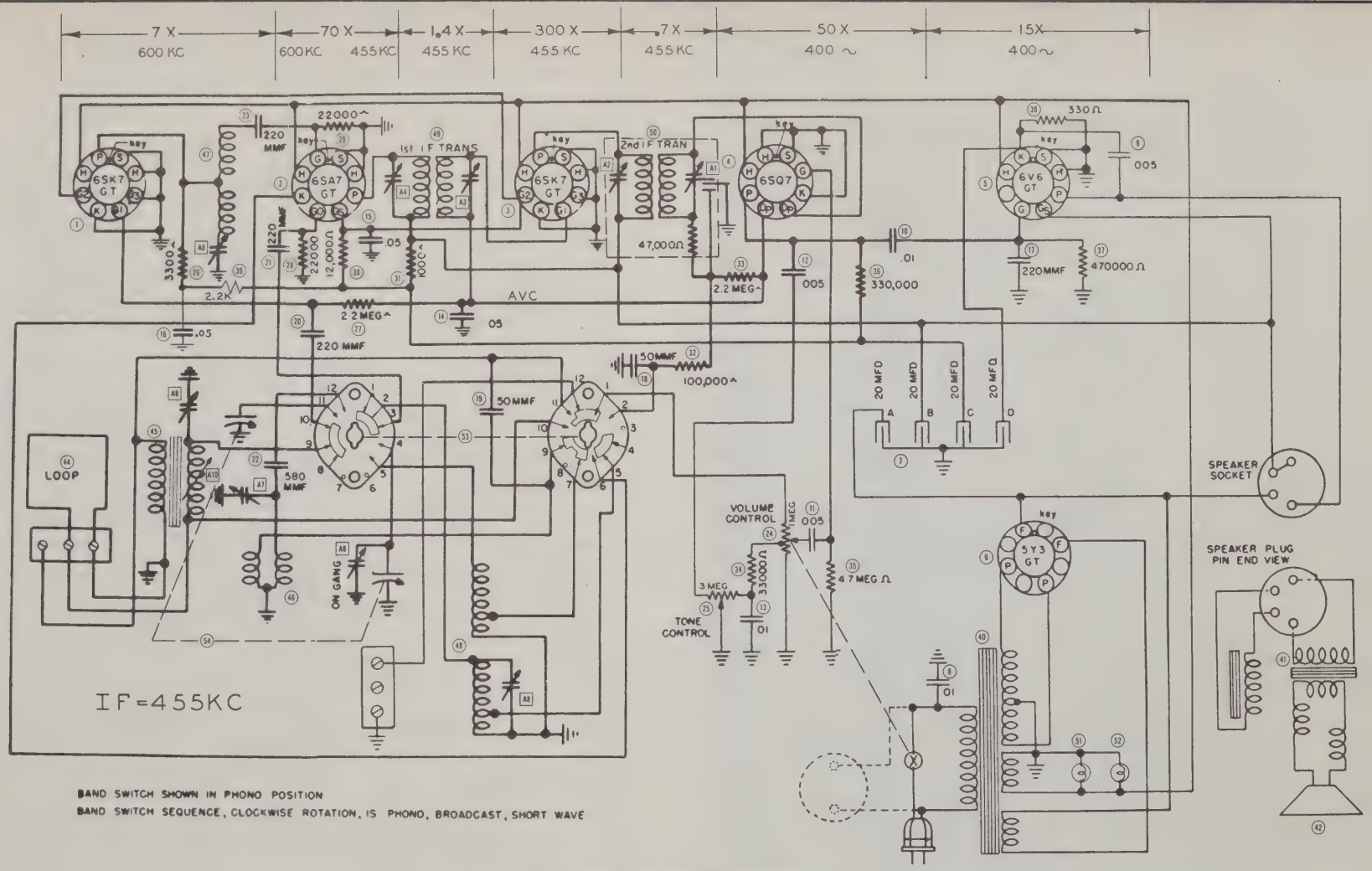
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



CROSLEY MODELS 66CS, 66CSM

CROSLEY MODELS 66CS, 66CSM



BAND SWITCH SHOWN IN PHONO POSITION

BAND SWITCH SEQUENCE, CLOCKWISE ROTATION, IS PHONO, BROADCAST, SHORT WAVE

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	0V.	-.25V.DC	0V.	78V.DC	6.2V.AC	190V.DC
2	6SA7	0V.	0V.	250V.DC	78V.DC	-5.5V.DC	0V.	6.2V.AC	0V.
3	6SK7	0V.	0V.	0V.	-.62V.DC	0V.	78V.DC	6.2V.AC	250V.DC
4	6SQ7GT	0V.	-.2V.DC	0V.	-.45V.DC	-.62V.DC	08V.DC	6.2V.A.	0V.
5	6V6G T/G	0V.	0V.	240V.DC	250V.DC	0V.	230V.DC	6.2V.AC	14V.DC
6	5Y3GT/G	0V.	336V.DC	0V.	350V.DC	82V.AC	350V.AC	0V.	336V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	0Ω	4.5MEG	0Ω	62 KΩ	.1Ω	58 KΩ
2	6SA7	0Ω	0Ω	50 KΩ	62 KΩ	18 KΩ	.5Ω	.1Ω	20 KΩ
3	6SK7	0Ω	0Ω	0Ω	2.6MEG	0Ω	62 KΩ	.1Ω	50 KΩ
4	6SQ7GT	0Ω	5 MEG.	0Ω	900 KΩ	2.6 MEG	400 KΩ	.1Ω	0Ω
5	6V6GT/G	0Ω	0Ω	50K Ω	50 KΩ	420 KΩ	50 KΩ	.1Ω	300Ω
6	5Y3GT/G	INF.	50 KΩ	INF.	200Ω	INF.	190Ω	INF.	50KΩ

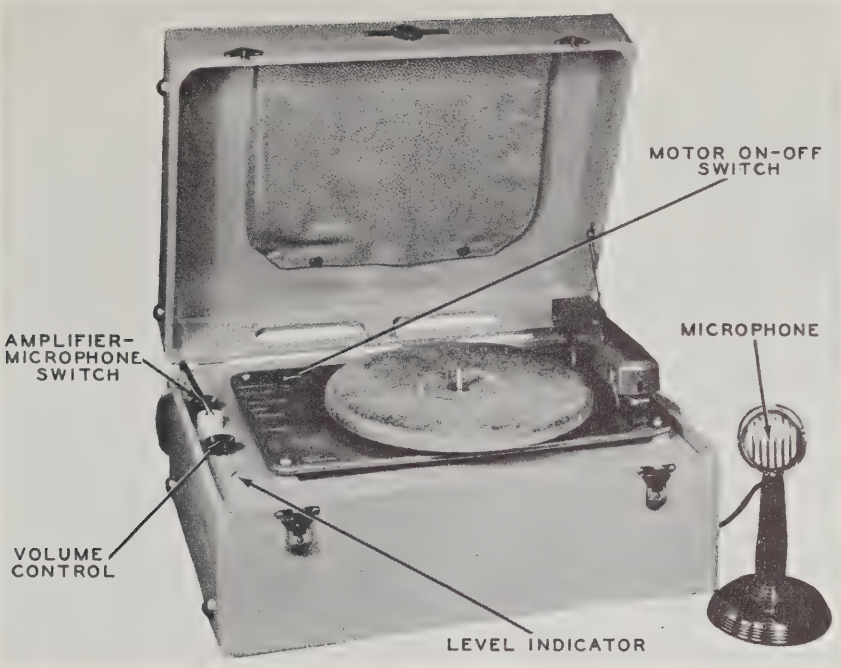
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

478-14

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 3 volts to the AVC line. Loop antenna connections shorted at terminal strip on chassis during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

EMERSON
MODEL 529



EMERSON MODEL 529

TRADE NAME	Emerson, Model 529, 529-9
MANUFACTURER	Emerson Radio & Phono Corp., 111 Eighth Ave., New York, N.Y,
TYPE SET	AC Operated Portable Recorder & Phonograph
TUBES (FIVE)	Types, 6SQ7 Mic. Amp., 6SL7GT AF-Phase Inv., (2) 25L6GT/G Power Output, 25Z6GT/G Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .490 Amp. @ 117 Volts AC

OPERATING INSTRUCTIONS

1. Place recording blank on turntable spindle, making sure disc drive pin fits in small opening.
2. Use cutting needle and recording blanks (discs) of good quality. Insert cutting needle in its slot as far as it will reach. Make sure upper flat surface of needle exactly faces set screw, which should be firmly tightened.
3. Cutting arm has been factory adjusted for proper arm height and for cutting depth for most recording discs. The arm height must permit the cutting needle to float freely in its spring mounting during recording. Cutting needle is properly adjusted when protruding set screw is in center of cutout when arm rests on disc. Adjust height by resetting CUTTER HEIGHT ADJUSTMENT SCREW on under side of arm. When groove depth adjustment is properly set, thickness of shavings from disc is comparable to human hair.
4. Turn GROOVE DEPTH ADJUSTMENT SCREW to left to decrease shaving thickness, to right to increase thickness. Shallow grooves cause needle to jump when disc is played back; too deep grooves cause echo effect on playback.
5. Turn on VOLUME switch and allow for warm up.
6. For recording from microphone, insert plug in socket marked MICROPHONE. Set AMPLIFIER-MICROPHONE switch to MICROPHONE position. Hold microphone on non-metal position only, approximately two inches from mouth and adjust VOLUME control until level indicator glows on voice peaks. Experience will indicate best setting for proper recording. Do not turn volume down too low. For recording from radio, phonograph or amplifier, connect plug, supplied, to voice coil of radio or amplifier speaker. Plug external sound source into socket marked AMPLIFIER and set AMPLIFIER-MICROPHONE switch to AMPLIFIER. Set VOLUME control on recorder and volume control on sound source so that level indicator glows on sound peaks.
7. To record from both microphone and external sound source simultaneously, set switch to MICROPHONE position. Set VOLUME control on recorder for proper microphone sound level as shown on level indicator. Set external sound source volume control for proper sound level shown on indicator.
8. To set cutting arm on disc, raise arm four or five inches from support to disengage it from guiding mechanism beneath panel and move arm over to disc. Set arm down so that white sighting marker is approximately 1/4-inch from outer edge of disc.
9. Turn ON motor switch. Cut two or three silent grooves before recording.
10. Turn OFF motor switch when needle is approximately 1/4-inch from edge of paper label.
11. If it is desired to interrupt a recording, shut OFF motor, allowing arm to remain on disc. When recording is resumed turn ON motor. When making several disconnected recordings on one disc, remove arm after each portion and reset approximately 1/8-inch beyond last groove of previous recording.

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PARTS LIST AND DESCRIPTIONS

EMERSON
MODEL 529, 529-C

TUBES

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. Amp.	6SQ7	6SQ7	8Q	
2	AF-Phase Inv.	6SL7GT	6SL7GT	8BD	
3	Power Output	25L6GT/G	25L6GT/G	7AC	
4	" "	25L6GT/G	25L6GT/G	7AC	
5	Rectifier	25Z6GT/G	25Z6GT/G	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	50	150	925260	PRSA150-50-30	BRD3515	2N520	M-5030-150	TA-530	Filter - Green
B	30	150							" - Red
7	8	150	925100	PRS150-8	BR815	TC42	M-8-150	UT-81	"
8	.1	200	920040	484-.1	DT4P1	TP425	S-4-1	TC-1	Line Filter
9	.01	400	920090	484-01	DT4S1	TP421	S-4-01	TC-11	Output Plate Bypass
10	.05	200	920060	484-05	DT4S5	TP426	S-4-05	TC-15	Audio Coupling
11	.05	200	920060	484-05	DT4S5	TP426	S-4-05	TC-15	"
12	.05	200	920060	484-05	DT4S5	TP426	S-4-05	TC-15	" "
13	.05	200	920060	484-05	DT4S5	TP426	S-4-05	TC-15	" "
14	.15	400	920400	484-.15	DT4P1	TP417	S-4-1	TC-1	Line Isolation
15	.1	400	920250	484-.1	DT4P1	TP428	S-4-1	TC-1	Mic. Isolation
16	.05	400	920030	484-05	DT4S5	TP426	S-4-05	TC-15	Motor Isolation
17	100	500	910140	1468-0001	5WST1	MC235	M0.5-31	1FM-31	Tone Compensation

CONTROLS

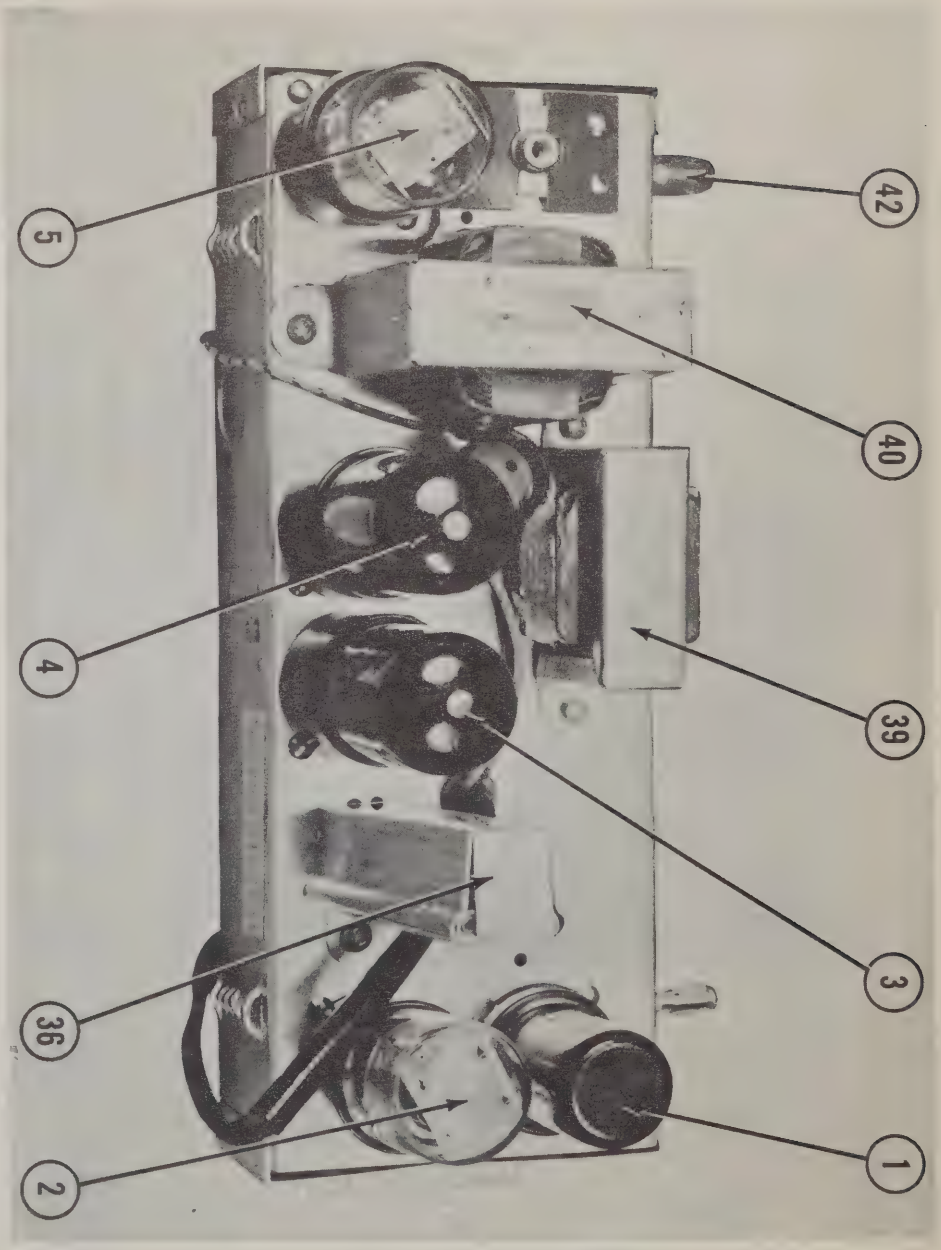
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18A	500KΩ	1	390005	UM156	D11-133	AM-58-S	Volume Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 18A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES
19	47KΩ	½	310890	BTS-47K	Yl.-Vl.-Or. Series Microphone Input-See Note 1
20	4.7 Meg.	½	341370	BTS-4.7 Meg.	Yl.-Vl.-Grn. Microphone Amp. Grid
21	100KΩ	½	340970	BTS-100K	Br.-Blk.-Yl. Microphone Amp. Plate Load
22	220KΩ	½	341050	BTS-220K	Red-Red-Yl. Microphone Amp. Plate Decoupling
23	220KΩ	½	341050	BTS-220K	Red-Red-Yl. Tone Compensation
24	100KΩ	½	340970	BTS-100K	Br.-Blk.-Yl. Line Isolation
25	2.2 Meg.	½	341290	BTS-2.2 Meg.	Red-Red-Yl. AF Grid
26	39Ω	½		BW-½-39	Or.-White-Blk. AF Cathode-See Note 2
27	220KΩ	½	341050	BTS-220K	Red-Red-Yl. AF Plate Load
28	220KΩ	½	341050	BTS-220K	Red-Red-Yl. Phase Inverter Plate Load
29	1000Ω	½	340490	BTS-1000	Br.-Blk.-Red Phase Inverter Cathode
30	10KΩ	½		BTS-10K	Br.-Blk.-Or. Phase Inverter Grid-See Note 3
31	220KΩ	½	341050	BTS-220K	Red-Red-Yl. Output Grid
32	220KΩ	½	341050	BTS-220K	Red-Red-Yl. Output Grid
33	75Ω	1	360220	Bw-1-82	Vl.-Grn.-Blk. Output Cathode
34	820KΩ	½	331190	BTS-820K	Gray-Red-Yl. Volume Indicator Shunt
35	1 Meg.	½	331210	BTS-1 Meg.	Br.-Blk.-Grn. Series Volume Indicator
36	100Ω	10	394131	AB-100	Line Dropping
37	470Ω	½		BTS-470	Yl.-Vl.-Br. Feedback - See Note 1
38	22Ω	1	380090	BW-1-22	Red-Red-Blk. Cutter Shunt

Note 1 - Not used in all models.
Note 2 - Some models use 4700Ω in this application. IRC replacement BTS-4700.
Note 3 - Some models use 22KΩ in this application. IRC replacement BTS-22K.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA			INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000~)	EMERSON PART NO.	STANCOR PART NO.	THORDARSON PART NO.	
39	.009A	500Ω	12 Henries	737060	C-1708*	T20C52*	*Drill one new mounting hole.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
40	6000Ω CT	6.7Ω	290Ω CT	.5Ω	734180	A-3870	T22S58		

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
41	Mike Switch	510260	SPDT
42	Neon Lamp	807030	GE Type NE-51
	Recorder Assby.	822500	
	Microphone "	825012	
	Cabinet	140048	
	Knob	460300	Selector
	"	460470	Volume

SERVICE NOTES

ITEM I - If excessive hum is experienced, try reversing plug in the AC outlet. The best position of the line cord plug can be found by gently touching the side of the cutting needle and noting which position gives the least amount of vibration of the needle.

ITEM II- If hum is still present, disconnect the microphone and cutter head and connect the voice coil of a magnetic speaker to the cutter output plug. Turn microphone-amplifier switch to amplifier position (clockwise), and note hum level in the speaker.

If hum is present, it has been found, in some models, that a change of resistor (25) from 2.2 meg. to 470K will reduce the hum to a satisfactory level. After this change, if the hum is still present, check the tubes for leakage.

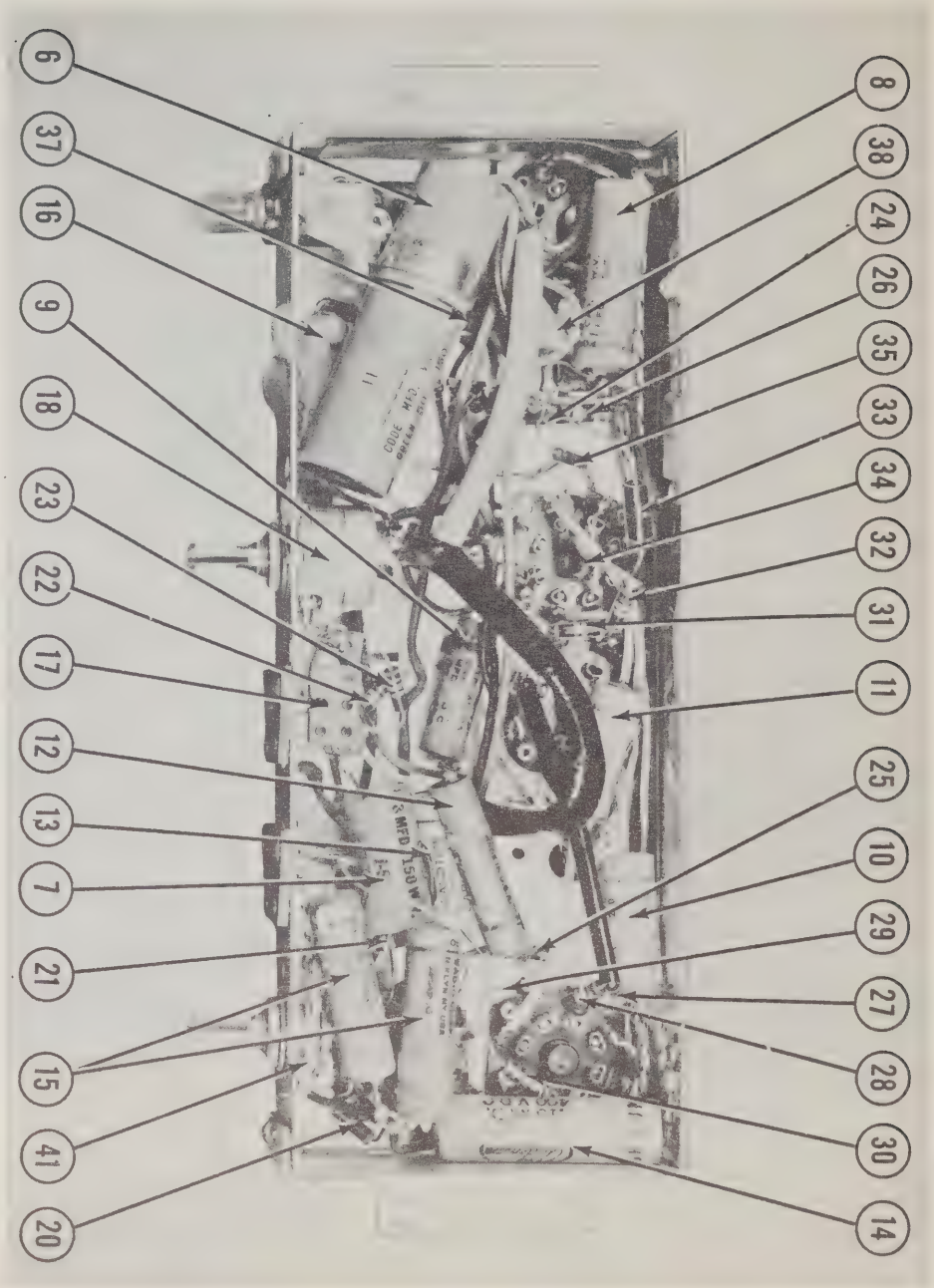
ITEM III- After changing the above resistor and hum is at a minimum, turn the microphone-amplifier switch to "Microphone" and note if hum level increases appreciably with the volume control at maximum. If it does, change capacitor (13) from .05MFD. to .001MFD, reducing the low freq. response. Resistor (38) may be removed, thus increasing the cutter head output.

ITEM IV- When using the microphone, care should be taken not to touch the metal parts of the microphone. When recording from an external sound source, make connections to a low impedance source, such as the voice coil. If connected to a high impedance source (over 1000 ohms), a shielded lead to the recorder should be used to prevent hum pickup.

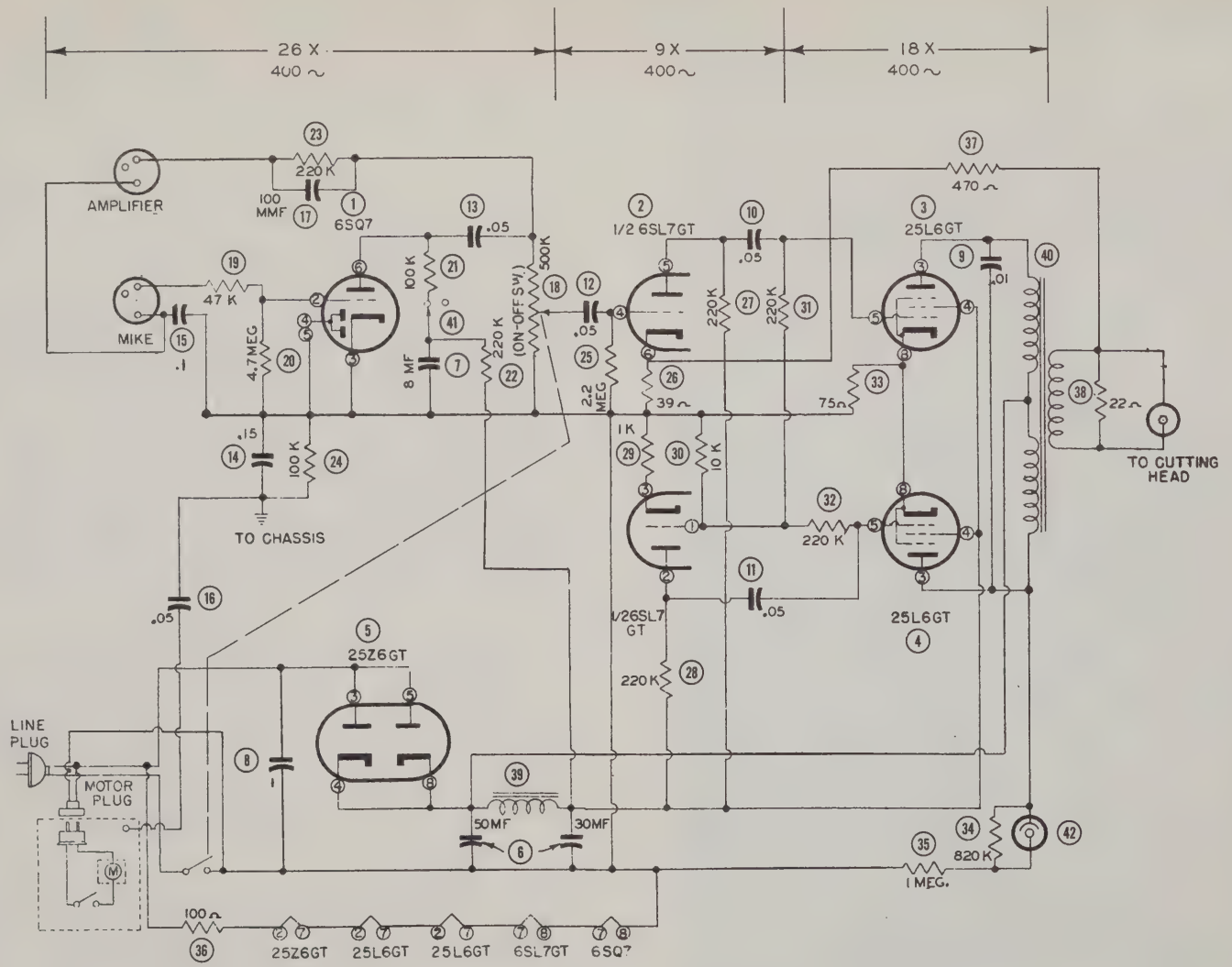
DISASSEMBLY INSTRUCTIONS

1. Remove two push-on type control knobs.
2. Remove four Phillips head screws holding top mounting panel. Lift up panel.
3. Remove recorder motor plug from receptacle.
4. Remove recorder plug from chassis.
5. Unsolder ground lead from motor frame.
6. Remove four hex nuts holding chassis to cabinet. Remove chassis.

CHASSIS—BOTTOM VIEW



EMERSON MODEL 529, 529-9



VOLTAGE AND RESISTANCE TAKEN WITH SWITCH IN MICROPHONE POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SQ7	0V.	±58 V DC	0 V.	0V.	0V.	59 V.DC	0V.	6V. AC
2	6SL7G T	±2 V.DC	33 V.DC	-4V.DC	-4.2 V.DC	50 V.DC	0V.	13 V.AC	6 V.AC
3	25L6GT/G	0 V.	13 V.AC	120 V.DC	122 V.DC	0 V.	±1 V.DC	35 V.AC	8.3 V. DC
4	25L6GT/G	0 V.	35 V.AC	120 V.DC	122 V.DC	0 V.	62 V.DC	64 V.AC	8.3 V. DC
5	25Z6GT/G	0 V.	87 V.AC	117 V.AC	127 V.DC	117 V.AC	117 V.AC	64 V.AC	127 V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SQ7	100K Ω	4 MEG+	0 Ω	0 Ω	0 Ω	320K Ω	0 Ω	5 Ω
2	6SL7	10K Ω	300K Ω	1000 Ω	2.2 MEG.	300K Ω	35 Ω	8 Ω	5 Ω
3	25L6GT/G	INF.	8 Ω	60 K Ω	60K Ω	220K Ω	10K Ω	17 Ω	70 Ω
4	25L6GT/G	INF.	17 Ω	60 K Ω	60K Ω	220K Ω	480K Ω	27 Ω	70 Ω
5	25Z6GT/G	INF.	42 Ω	130 Ω	60K Ω	130 Ω	130 Ω	27 Ω	80K Ω

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

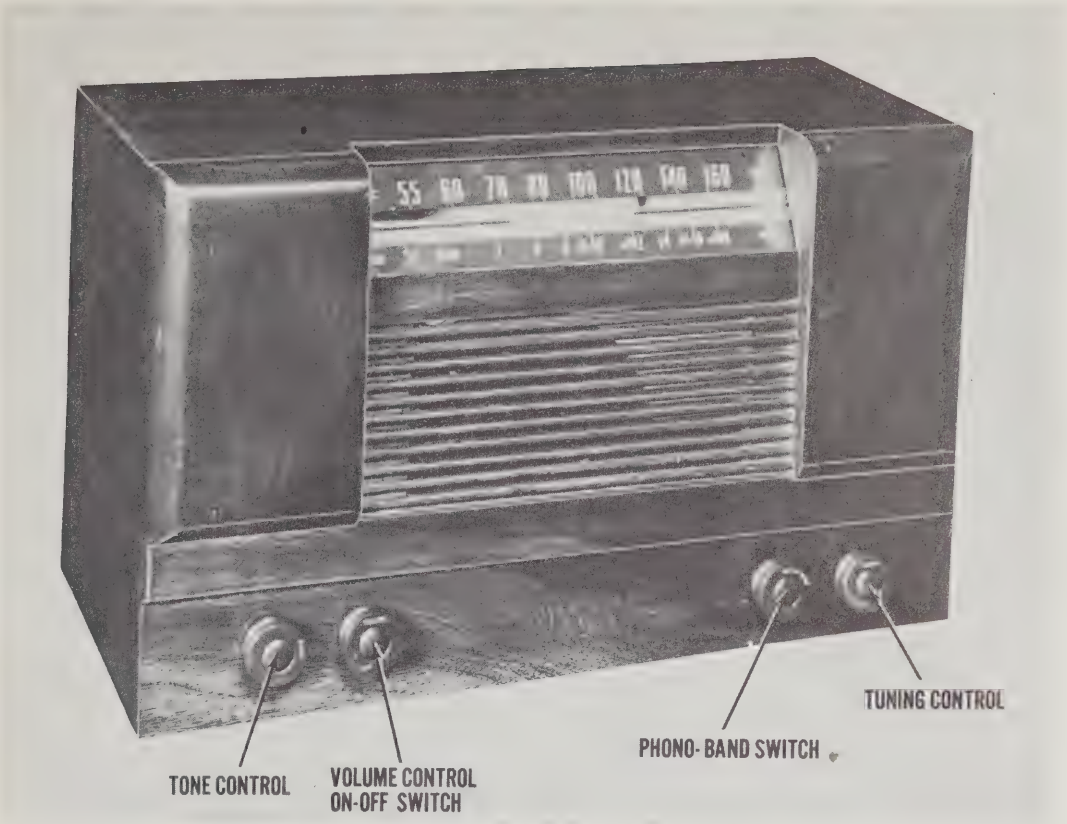
478-15

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ESPEY, CHASSIS MODEL 97 A (MODELS 6611, 6612, 6613, 6614, 6615, 6630, 6631, 6632, 6634, 6635)

ESPEY, CHASSIS MODEL 97 A (MODELS 6611, 6612, 6613, 6614, 6615, 6630, 6631, 6632, 6634, 6635)

ESPEY, CHASSIS MODEL 97 A (MODELS 6611, 6612, 6613, 6614, 6615, 6630, 6631, 6632, 6634, 6635)



ESPEY MODEL 6613

TRADE NAME	Espey, Chassis Model 97A (Models 6611, 6612, 6613, 6614, 6615, 6630, 6631, 6632, 6634, 6635.)
MANUFACTURER	Espey Mfg. Co., Inc., 528 E. 72nd St., New York 21, N.Y.
TYPE SET	AC-DC Operated Superheterodyne with Loop Ant. and Phonograph Provisions
TUBES (SIX)	Types, 14Q7 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, (2) 35A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC (AC only with Phono Models) RATING .450 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1660KC SHORT WAVE 5.5-18.6MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a capacitor in series with low side of signal generator and B-. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01 MFD	High side to front stator of tuning cap. Low side to B-.	455KC	BC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001 MFD. to reduce hum modulation.
100MMFD	High side to ext. ant. lead. Low side to B-.	1660KC	"	"	"	A5	Adjust for maximum output
100MMFD	"	1500KC	"	Tune for maximum output.	"	A6	" " " "
100MMFD	"	600KC	"	"	"	A7	Rock tuning cap. and adjust for maximum output.
100MMFD	"	1660KC	"	Tuning cap fully open.	"	A5	Adjust for maximum output
100MMFD in series with 400Ω	"	18.6MC	SW	"	"	A8	" " " "
"	"	18MC	"	Tune for maximum output.	"	A9	Rock tuning cap and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

ESPEY CHASSIS MODEL 97A (Models 6611,6612, 6613,6614,6615,6630,6631,6632,6634,6635)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ESPEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	14Q7	14Q7	8AL	
2	IF Amp.	14A7	14A7	8V	
3	Det.-AVC-AF	14B6	14B6	8W	
4	Power Output	35A5	35A5	6AA	
5	" "	35A5	35A5	6AA	
6	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ESPEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	A25.020	PRSA150-40-40	BRD4415	2N511	DSB-305	TA-440	Filter - Red
B	40	150							" - "
C	20	25		PRS25-25	BR202A	TC26		TA-25	Cath. Bypass - Green
8	.05	400		484-05	DT4S5	TP426	S-4-05	TC-15	Line Filter
9	.1	200		484-.1	DT4P1	TP428	S-4-1	TC-1	Line Isolation
10	.005	400		484-005	DT6D5	TP408	S-6-005	TC-25	Output Plate Bypass
11	.005	400		484-005	DT6D5	TP408	S-6-005	TC-25	" " "
12	.1	200		484-.1	DT4P1	TP428	S-4-1	TC-1	Audio Coupling
13	.002	600		684-002	DT6D2	TP405	S-6-002	TC-22	Tone Compensation
14	.25	200		484-.25	DT4P25	TP430	S-4-25	TC-2	Audio Plate Decoup.
15	.01	400		484-01	DT4S1	TP421	S-4-01	TC-11	Tone Compensation
16	.01	400		484-01	DT4S1	TP421	S-4-01	TC-11	Audio Coupling
17	.05	200		484-05	DT4S5	TP426	S-4-05	TC-15	Phono Isolation
18	.05	200		484-05	DT4S5	TP426	S-4-05	TC-15	Shield Isolation
19	.05	200		484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
20	.1	200		484-.1	DT4P1	TP428	S-4-1	TC-1	Conv. Screen Bypass
21	.005	400		484-005	DT6D5	TP408	S-6-005	TC-25	Ant. Isolation
22	.005	400		484-005	DT6D5	TP408	S-6-005	TC-25	Ext. Ant. Coupling
23	100	500		1468-0001	5W5T1	MC235	MO.5-31	1FM-31	IF Bypass Diode
24	250	500		1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Loop Pri. Shunt Fixed Padder
25	4300	300							
26	100	500		1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Osc. Grid Capacitor

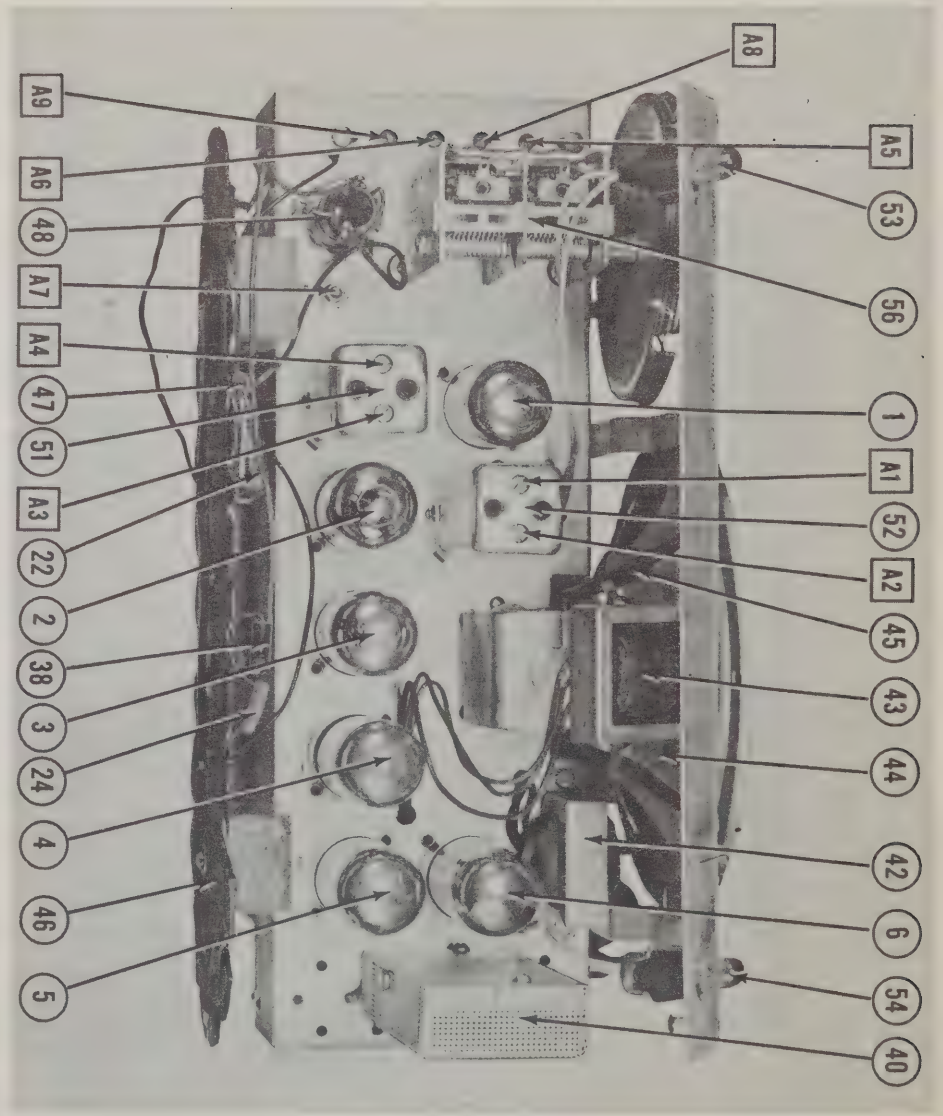
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ESPEY PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
27A	500K	1	RA9.066	MR48	D13-133	M-60-Z	Vol. Cont.
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 27A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
28A	100K	1	RA9.068	MR39	D13-128	M-51-Z	Tone Cont.
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 28A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ESPEY PART No.	IRC PART No.	IDENTIFICATION CODES
29	22KΩ	¼		BTS-22K	Red-Red-Or. Oscillator Grid
30	180Ω	¼		BW-½-180	Br.-Gray-Br. Converter Decoupling
31	3.3 Meg.	¼		BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
32	47KΩ	¼		BTS-47K	Yl.-Vi.-Or. Diode RF Filter
33	470KΩ	¼		BTS-470K	Yl.-Vi.-Yl. AF Grid
34	100KΩ	¼		BTS-100K	Br.-Blk.-Yl. AF Plate Load
35	220KΩ	¼		BTS-220K	Red-Red-Yl. Tone Compensation
36	100Ω	1		BW-1-100	Br.-Blk.-Br. Output Cathode
37	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter
38	100Ω	¼		BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
39	220KΩ	¼		BTS-220K	Red-Red-Yl. Line Isolation
40A	83Ω	25	RA14.026		" Dropping
B	462Ω				" "
C	94Ω				Pilot Light Shunt
D	94Ω				" " "
41	47KΩ	¼		BTS-47K	Yl.-Vi.-Or. AF Plate Decoupling

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CHOKE (AUDIO COUPLING)

ITEM NO.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	IMPEDANCE	D. C. RESISTANCE	ESPEY PART NO.	STANCOR PART NO.	THORDARSON PART NO.	
42	Matched to P-P Grids	2500Ω tapped @ 1100Ω	TA15.018	A-53-C*	T20A16†	*Do not use primary. Connect secondary to grids and ground center tap. †Connect primary to coupling condenser and ground. Connect secondary to grids and ground center tap.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ESPEY PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
43	20000Ω CT	3.3Ω	200Ω CT	.35Ω	Part of C-11.039	A-3806#	T22S47		#Universal transformer. Use taps which will give best impedance match.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ESPEY PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-109		
44	PM	3.3Ω	C-11.039	Mod. P6-W		
	CONE DIA.	VC DIA.				
45	6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ESPEY PART No.	MEISSNER PART No.	
46	Loop Ant.	0Ω	1Ω			
47	Peaking Coil		2.5Ω			
48	SW Ant. Coil	0Ω	0Ω		14-1044	
49	BC Osc. Coil	.5Ω	5Ω		14-1040	
50	SW " "	0Ω	0Ω		14-1046	
51	Input IF	32Ω	21Ω	ZC2.191-1	16-6666	
52	Output IF	27Ω	25Ω	ZC2.191-2	16-6667	

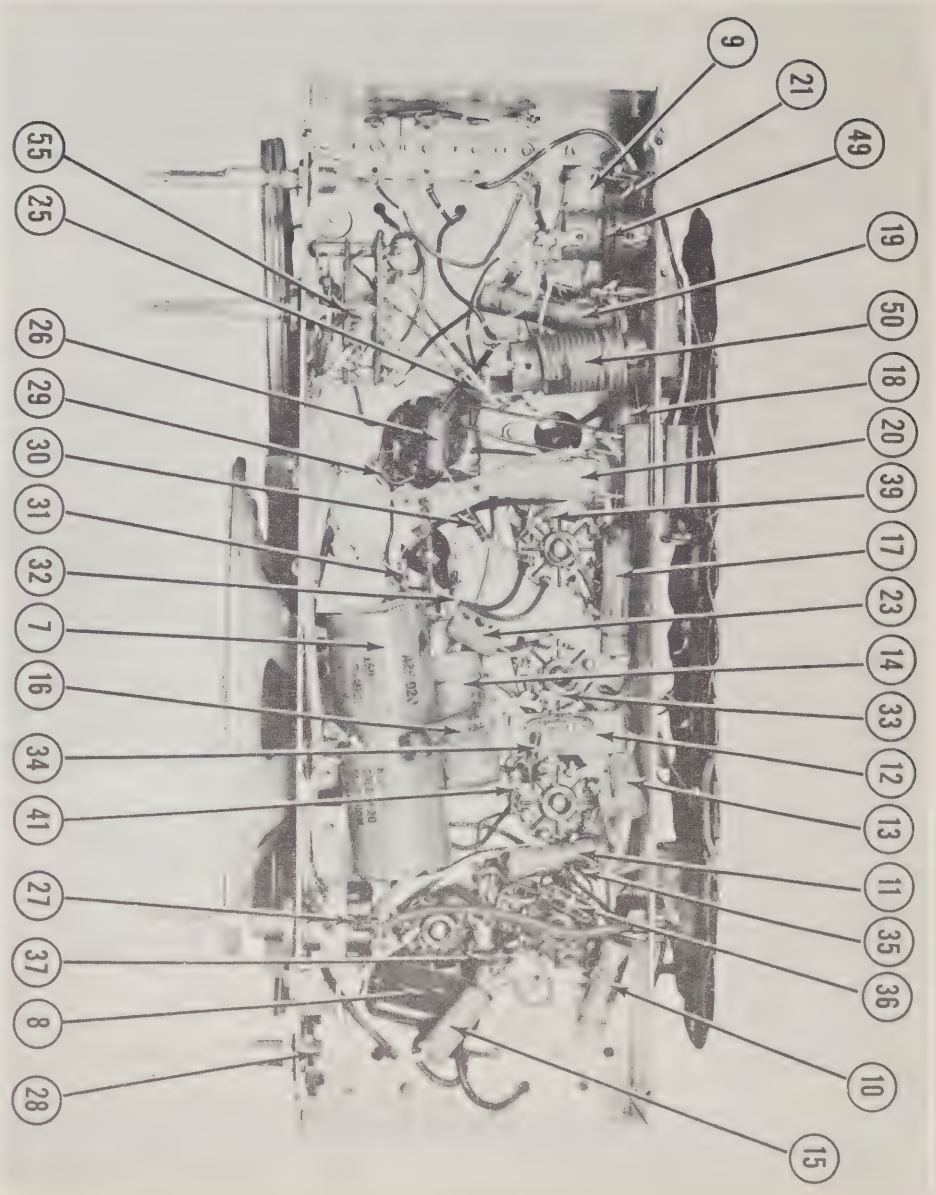
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ESPEY PART No.		
53	Bayonet	6-8	0.15	Brown			Type 47
54	"	6-6	0.15	"			" "

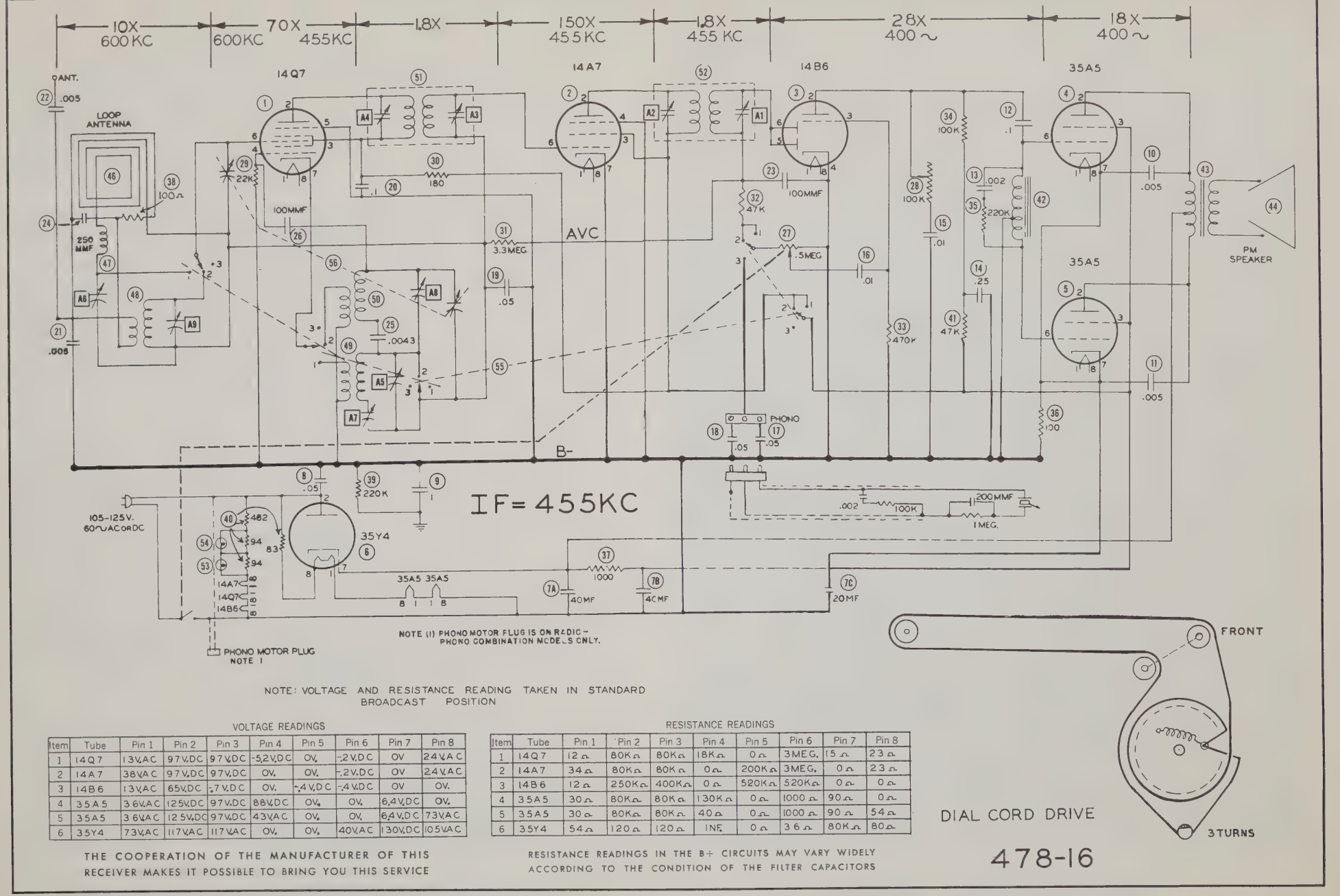
MISCELLANEOUS

ITEM No.	PART NAME	ESPEY PART No.	NOTES
55	Switch		Band-Phono
56	2 Gang Var. Cap.	B6037	14-473 MMF (each section)

CHASSIS—BOTTOM VIEW



ESPEY CHASSIS MODEL 97A (Models 6611,6612,6613,6614,6615,6630,6631,6624,6625)



NOTE: VOLTAGE AND RESISTANCE READING TAKEN IN STANDARD BROADCAST POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	13V.AC	97V.DC	97V.DC	-5.2V.DC	0V.	-2V.DC	0V	24V.AC
2	14A7	38V.AC	97V.DC	97V.DC	0V.	0V.	-2V.DC	0V	24V.AC
3	14B6	13V.AC	65V.DC	-7V.DC	0V.	-4V.DC	-4V.DC	0V	0V.
4	35A5	36V.AC	125V.DC	97V.DC	88V.DC	0V.	0V.	6.4V.DC	0V.
5	35A5	36V.AC	125V.DC	97V.DC	43V.AC	0V.	0V.	6.4V.DC	73V.AC
6	35Y4	73V.AC	117V.AC	117V.AC	0V.	0V.	40V.AC	130V.DC	105V.AC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

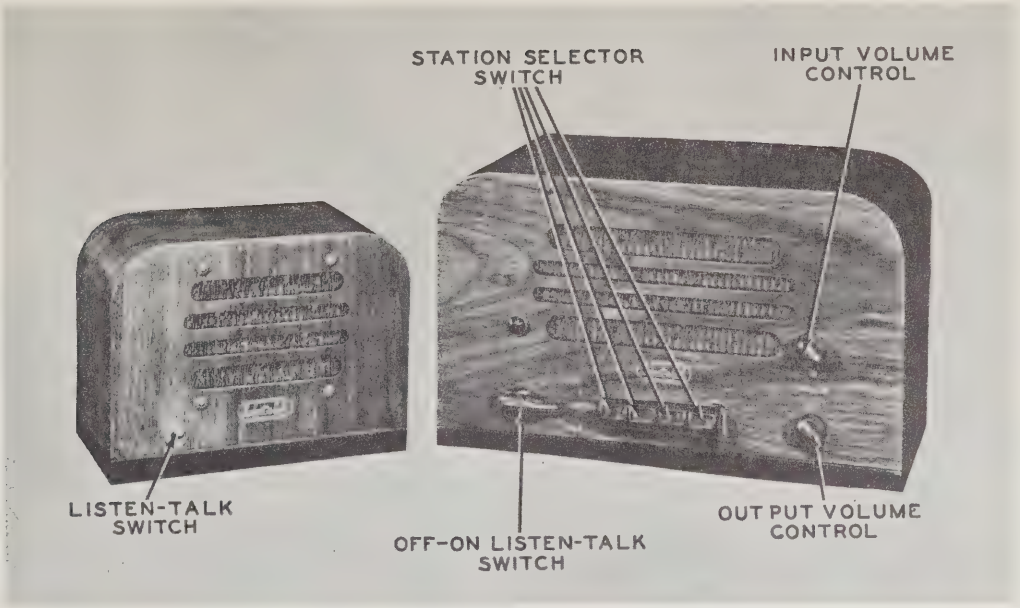
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	12Ω	80KΩ	80KΩ	18KΩ	0Ω	3MEG.	15Ω	23Ω
2	14A7	34Ω	80KΩ	80KΩ	0Ω	200KΩ	3MEG.	0Ω	23Ω
3	14B6	12Ω	250KΩ	400KΩ	0Ω	520KΩ	520KΩ	0Ω	0Ω
4	35A5	30Ω	80KΩ	80KΩ	130KΩ	0Ω	1000Ω	90Ω	0Ω
5	35A5	30Ω	80KΩ	80KΩ	40Ω	0Ω	1000Ω	90Ω	54Ω
6	35Y4	54Ω	120Ω	120Ω	INF.	0Ω	36Ω	80KΩ	80Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

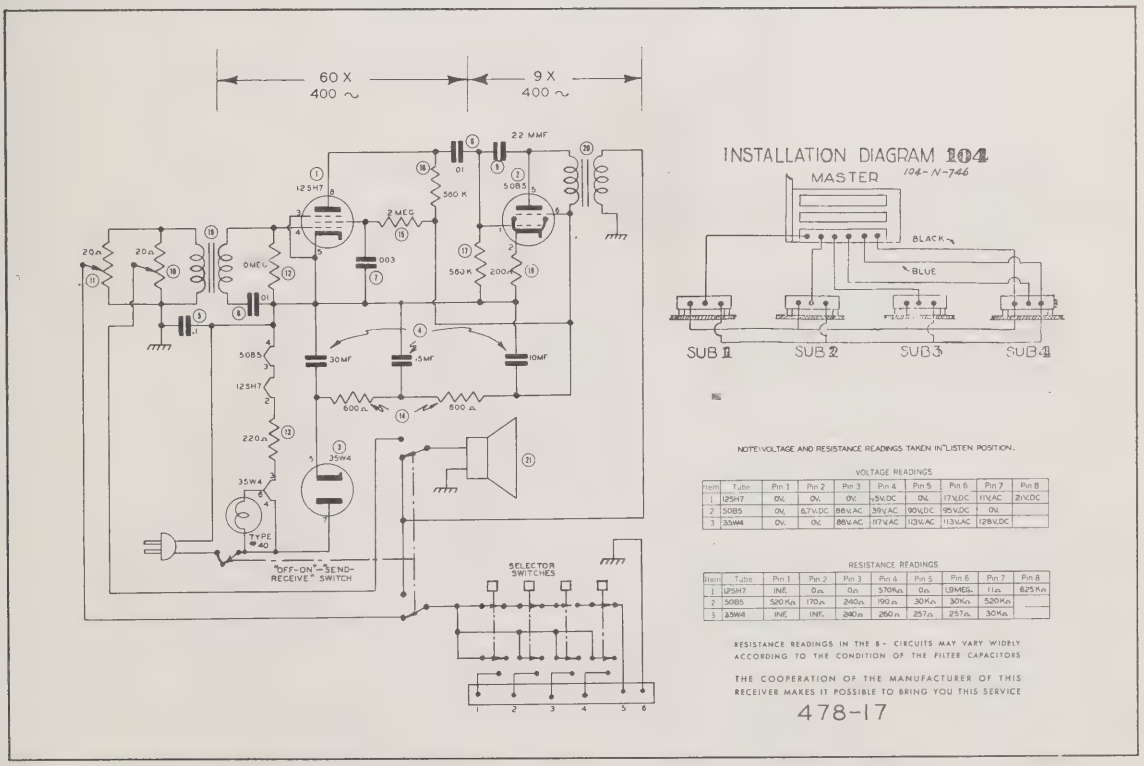
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



FEDERAL (SELECT-A-CALL) MODEL 104

TRADE NAME	Federal Model 104 Select-A-Call
MANUFACTURER	Federal Mfg. & Electronic Co., 5914 N. Western Ave., Chicago 45, Ill.
TYPE SET	AC-DC Operated Inter-Communication System
TUBES	(THREE) Types, 12SH7 Audio Amp., 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC RATING .190 Amps. @ 117V AC



Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SH7	0V.	0V.	0V.	-.5V.DC	0V.	117V.DC	117V.AC	210V.DC
2	50B5	0V.	6.7V.DC	88V.AC	39V.AC	90V.DC	95V.DC	0V.	
3	35W4	0V.	0V.	88V.AC	117V.AC	113V.AC	113V.AC	128V.DC	

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SH7	INF.	0Ω	0Ω	570KΩ	0Ω	1.9MEG.	11Ω	625KΩ
2	50B5	520KΩ	170Ω	240Ω	190Ω	30KΩ	30KΩ	520KΩ	
3	35W4	INF.	INF.	240Ω	260Ω	257Ω	257Ω	30KΩ	

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FEDERAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Audio Amp.	12SH7	12SH7	8BK	
2	Power Output	50B5	50B5	7BZ	
3	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FEDERAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	30	250		AF444J	UP6CJ45	FP363	DY-3x20-450	EL-432	Filter - Red Dot
B	15	250							" - Blue Dot
C	10	250							" - Grn. Dot
5	.1	600		684-.1	DT6P1	TP418	S-6-1	TC-1	Line Isolation
6	10000	100		1467-01	DT4S1	TP421	S-4-01	TC-11	Audio Coupling
7	3000	500		1468-003	1W5D3	MC461	MW.5-23	1FM-23	Audio Screen Bypass
8	10000	100		1467-01	DT4S1	TP421	S-4-01	TC-11	Input Trans. Coupling
9	22	500		1468-000025	5W5Q2	MC220	MO.5-425	MS-42	Feedback

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FEDERAL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
10&11A	5Ω	2	63G411	V	W-50	58-50	Input & Output Vol. Cont.-Later Prod.
10&11B	20Ω	2		T	W-20	58-20	" " " " " -Early Prod.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FEDERAL PART No.	IRC PART No.	IDENTIFICATION CODES
12A	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Amplifier Grid-Used in early prod.
B	560KΩ	½		BTS-560K	Grn.-Blue-Yl. AF Amplifier Grid-Used in later prod.
13	220Ω	5		AB-250†	Line Dropping
14	1000Ω	10		AB-1000*	Filter-See Note 1
15A	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. AF Screen Dropping-Used in early prod.
B	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn. " " " -Used in later prod.
16	560KΩ	½		BTS-560K	Grn.-Blue-Yl. AF Plate Load
17	560KΩ	½		BTS-560K	Grn.-Blue-Yl. Output Grid
18	200Ω	½		BW-½-220	Red-Blk.-Br. Output Cathode

Note 1 - Some models use two 600Ω resistors in this application.
* - Set slider at center. † - Set slider at 220Ω from one end.

TRANSFORMER (INPUT)

ITEM NO.	RATING: RES. PRI.	RATING: RES. SEC.	RATING: TURNS RATIO PRI. TO SEC.	REPLACEMENT DATA: FEDERAL PART NO.	STANCOR PART NO.	THORDARSON PART NO.	INSTALLATION NOTES
19	1.3Ω	270Ω	1 to 141		A-4743‡	T20A04‡	‡Drill new mounting holes.

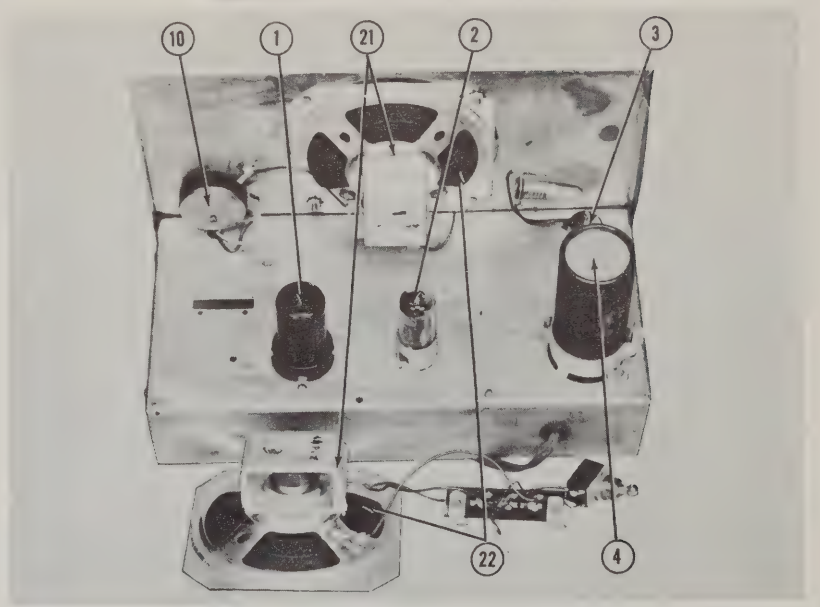
TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: FEDERAL PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
20	2000Ω	2.9Ω	180Ω	.6Ω		A-3876	T22S45		

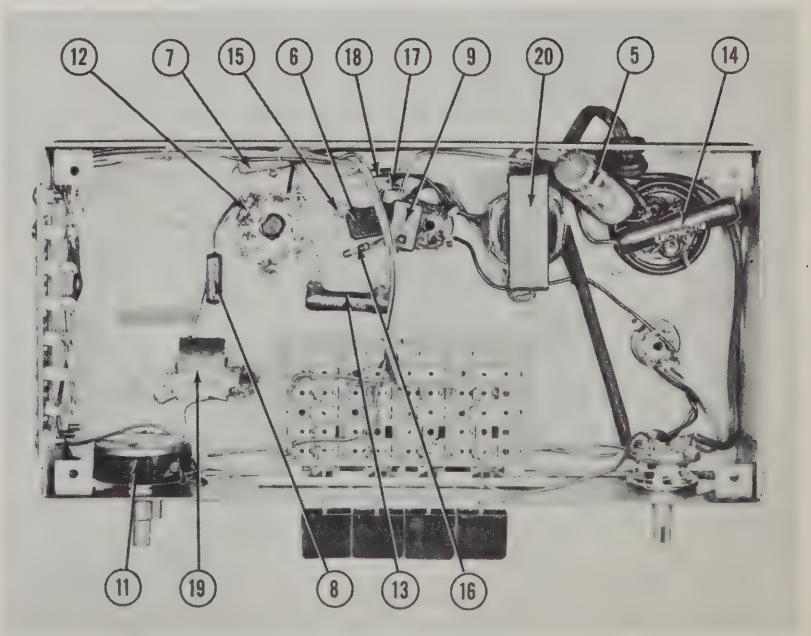
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: FEDERAL PART No.	JENSEN PART No.		INSTALLATION NOTES
21	FIELD	VC IMP.	42P12	ST-113		
	PM	2.9Ω		Mod. P4-X		
22	CONE DIA.	VC DIA.	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			
	4"	1/2"				

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



AIR KING 4704	Page 3 - Item 37 AIR KING Part Listing should be 5870.
ATLAS AB-45	Page 2 - Items 7A, B AEROVOX Part Listing should be PRSA150-50-30. SOLAR Part Listing should be M-5030-150.
CONTINENTAL ELECTRONICS SKYWEIGHT 82	Page 1 MANUFACTURER'S address should be 252 Norman Ave., Brooklyn 22, N.Y. Page 4 On the schematic diagram production changes may use following values. Items 17 and 18 combined to 500Ω, Item 21 to 47K, Item 25 to 200Ω, Item 27 to 470K, Item 28 to 33K, Item 9 to .005, Item 11 to .002. Make the following corrections on schematic: Signal grid on 12BA6 should be Pin 1, Reverse 50B6 and 12BA6 in filament string.
DETROLA 626 SERIES	Page 1 On the schematic diagram the following production changes will be in some sets. Delete line connecting Item 13 to Item 8; change Item 22 from Pin 7 of Item 3 to Pin 2 of Item 3; Change Item 6 to .05 MFD; Item 16 not used; insert lead from chassis to metal base of record changer. Page 2 - Item 5 DETROLA Part Listing should be BD410503.
GAROD 5D, 5D-2	Page 2 - Items 6A,B,C SOLAR Part Listing should be DY-8040-150 + DGM-250-25, Sprague Part Listing should be EL-351 + TA-430, AEROVOX Part Listing should be PRSA150-30-20/25-100 + PRS150-40 + PRS25-150, CORNELL-DUBILIER Part Listing should be UP6CJ44 + BRH251.
GENERAL-TELEVISION 23A6	Page 2 - Items 5A, B, C SOLAR Part Listing should be DY-3x40-150. Page 2 - Item 18C MALLORY Part Listing should be M24, IRC Part Listing should be 45. CLAROSTAT Part Listing should be SW-A4.
HOFFMAN A401	Page 2 - Item 25 Some sets use 22K. Items 35 and 36 are not used when Item 3 is 6SK7. Page 4 On the schematic diagram some sets may have Pin 5 of Item 4 connected to AVC line between Item 26 and 24.
HOFFMAN A700	Page 1 Under ALIGNMENT INSTRUCTIONS in Step 2 in REMARKS column add "With loop in open position." In Step 3 delete A6 and Add "Slide RF Coil (54) for maximum output." Add Step 4 adjusting A6 for maximum output at 600KC. Page 4 Production changes will revise schematic as follows: Delete Items 7, 12 and 39. Connect Pin 4 of Item 4 to Pin 5 of Item 4. Connect Item 8 to Pin 5 instead of Pin 1 on Item 5.
LAFAYETTE MC10B, MC10Y	Page 2 - Items 6A, B AEROVOX Part Listing should be PRSA150-50-30.
MAJESTIC 7C432 (Ch.4706), 7C447 (Ch.4707).	Page 1 IDENTIFICATION should read Models 7C432 (Ch. 4706), 7C447 (Ch. 4707). On ALIGNMENT INSTRUCTIONS Step 4 in REMARKS Column should read - Repeat last three steps until no further improvement in output is obtained. Page 2 - Item 34 STANCOR Part Listing should be P-6119*. Add Installation Note "*Mount vertically with universal brackets". Page 3 - Item 36A JENSEN Part Listing should be ST-105 Mod. P5-X.
MASCO MA-17, MA-17P	Page 2 - Items 6A,B CORNELL-DUBILIER Part Listing should be BRL8845. SOLAR Part Listing should be DHN-2x8-450. Items 7A, B CORNELL-DUBILIER Part Listing should be BRL8845. SOLAR Part Listing should be DHN-2x8-450.

PHOTOFACT Folders provide you with the only service that is always up to the minute. The following listings represent production changes in design given to us *by the receiver manufacturers*, or revisions in the lines of our *participating replacement parts manufacturers*. This exclusive feature helps make servicing easier, quicker and better.

ADDITIONS AND PRODUCTION CHANGES

TO KEEP YOUR PHOTOFACT FOLDERS UP TO THE MINUTE

AIRADIO SU41D

Page 1
Under ALIGNMENT INSTRUCTIONS the Dummy Antenna in last four steps should be 75 MMFD.
Page 3 - Item 41
Primary DC resistance should be 240Ω. Items 43 and 44 the DC resistance of each primary and each secondary should be 230Ω.
Page 4
On the schematic diagram a 100 MMFD. capacitor should be shown as fixed trimmer across each primary and each secondary of Items 44 and 44.
The following Airadio Part numbers were made available after printing and should be inserted: Items 6 - CD1182, 7 - CD1190-50, 8 - CD1190-50, 9 - CD1190-50, 10 - CD1190-8, 11 - CD1190-8, 12 - CD1190-8, 13 - CD1190-50, 14 - CD1190-50, 15 - CD1072-27, 16 - CD1072-27, 17 - CD1072-27, 18 - CD1072-27, 19 - CD1072-27, 20 - CD1071-22, 21 - CD1181-17, 22 - CD1071-23, 23 - CD1070-25, 24 - RE-1138, 25 - RE-1130-477, 26 - RE-1130-207, 27 - RE-1130-686, 28 - RE-1130-687, 29 - RE-1130-476, 30 - RE-1130-476, 31 - RE-1130-108, 32 - RE-1130-109, 33 - RE-1130-228, 34 - RE-1130-684, 35- RE-1015-756, 36 - RE-1015-157, 37 - RE-1015-157, 38 - RE-1130-226, 39- TR-1041-2, 40A - AS-1835, 40B - AS-1837, 41 - AS-1836, 42 - AS-1839, 43 - AS-1805-2, 44 - AS-1805-2, 45 - AS-3000, 46 - SW-1052-1.

AIRADIO SU-52A, SU-52B, SU-52C

Page 2
On PHOTO CHASSIS - TOP VIEW change A18 to A16.
Page 4
On VOLTAGE READINGS Chart Pin 4 of Item 5 should read 4.3V DC.

AIRADIO TRA-1A, TRA-1B, TRA-1C

Make following corrections and productions changes.
Page 2 - Items 18 and 19
Add Note "Not used in Model TRA-1C. Item 24 to 2W and AIRADIO Part Listing should be RE-1114-366. Delete present Item 17. Add the following: 17A&17C- 4700Ω - 1W - RE-1129-475 - BTA4700. 17B - 1500Ω - 1W - RE-1129-155 - BTA1500.
Page 3 - Item 31A,B,C
Item 31A-AIRADIO Part Listing should be AS-1975-1
B- " " " " " AS-1975-4
C- " " " " " AS-1975-3
Page 3 - Item 47
AIRADIO Part Listing should be CY-1013.
Page 4 On the schematic diagram change Item 2 to Item 3, Item 3 to Item 2, Item 35 to Item 37, Item 36 to Item 35, Item 37 to Item 36.

AIRCASTLE 106B

Insert production changes used on some sets as follows:
Page 2 - Item 6A
20MFD - 150V Aircastle Part Listing 18-272. Item 6B 40MFD - 150V Aircastle Part Listing 18-280.
Page 2 - Items 15A, B, C
500KΩ 1W Aircastle Part Listing 24-164.

AIRCASTLE 5010, 5011, 5012, (Ch. 110)

Page 4
On the schematic diagram Item 27 should be 470Ω, Item 55, A5, A7 and A9 should return to AVC line instead of B-.

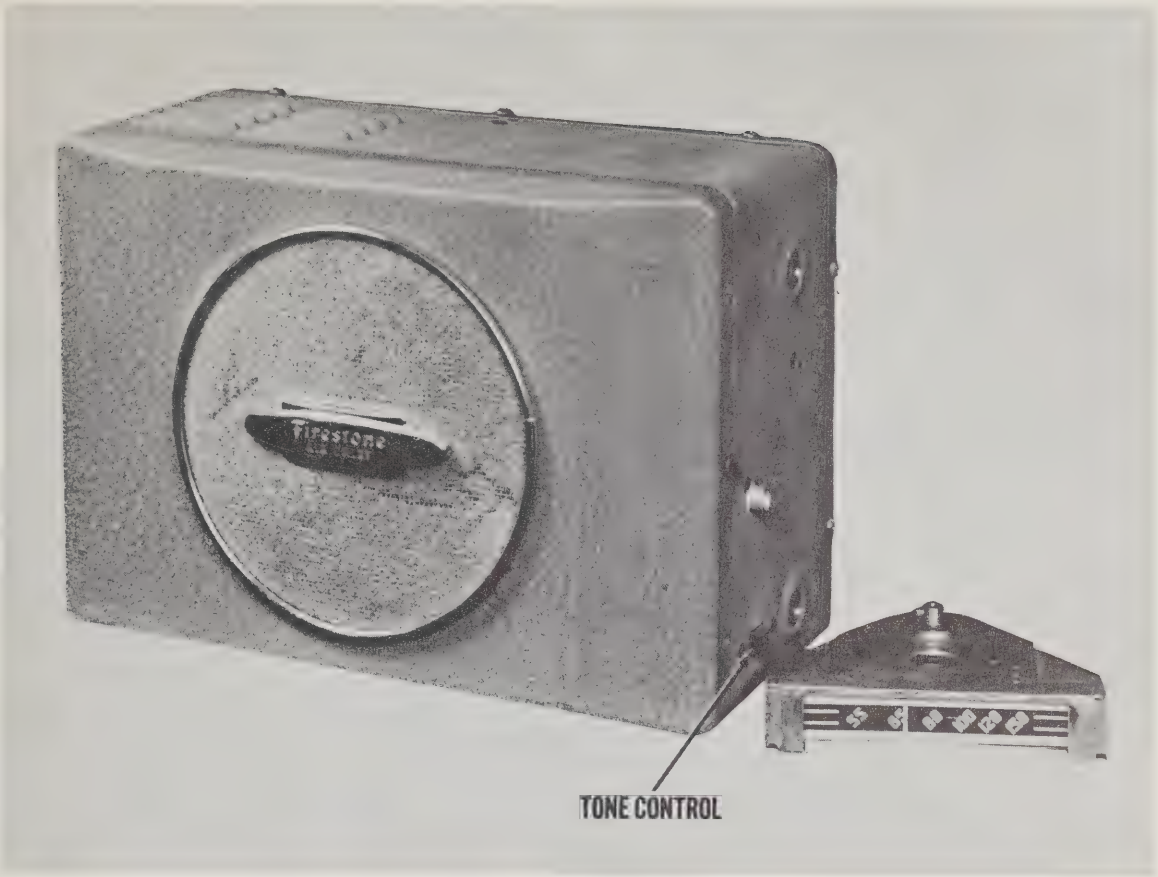
AIRCASTLE 7000, 7001

Page 2 - Item 12
Aircastle Part Listing should be "Part of SPK-2". Item 13 AIRCASTLE Part Listing should be SPK-2.

AIR CHIEF 4-A-21, 4-A-22

Page 1
Identification should be 4-A-21X, 4-A-22X. TRADE NAME should read - AIR CHIEF Models 4-A-21X (Code No. 5-5-9001A), 4-A-22X (Code No. 5-5-9001B).

FIRESTONE (AIR CHIEF)
MODEL 4-B-2



FIRESTONE (AIR CHIEF)
MODEL 4-B-2

FIRESTONE (AIR CHIEF) MODEL 4-B-2

TRADE NAME	Firestone (Air Chief), Model 4-B-2 (Code 7-6-PM14)
SUPPLIER	The Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	Battery Operated Automotive Superheterodyne Receiver
TUBES (SIX)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6V6GT Power Output, 0Z4 Rectifier.
POWER SUPPLY	6 Volt Storage Battery
TUNING RANGE—BROADCAST	540-1600KC RATING 6 Amp. @ 6.3 Volts DC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to ant. jack. Low side to chassis.	455KC	540KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	.1 MFD.	"	"	"	"	A5	Adjust for minimum output.
3	100MMFD	"	1600KC	Slugs fully out.	"	A6	Adjust for maximum output.
4	100MMFD	"	"	Tune for maximum output.	"	A7,A8.	Adjust for maximum output.
5	100MMFD	"	600KC	"	"	A9	Rock tuning control and adjust for maximum output. Repeat steps 3-5. After set is installed in car, readjust A8 on a weak station near 1400KC for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIR CHIEF PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Power Output	6V6GT	6V6GT	7AC	
6	Rectifier	0Z4	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR CHIEF PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	350	25099	AF32K4A	UP6CJ17	FP330	DY-312	EL-212	■ Filter
B	10	350							▲ "
C	20	25							Cath. Bypass
8	.5	100	25118	484-.5	DT4P5	TP431	S-4-5	TC-5	Hash Filter
9	.5	100	25118	484-.5	DT4P5	TP431	S-4-5	TC-5	" "
10	.007	1600	25109	1684-007	MD16D7	OW545	TM-16-007	TR-27	Buffer
11	.006	1200	25110	1084-006	MD16D6	TM460	TM-16-006	TR-26	Output Plate Bypass
12	.01	400	25113	484-01	DT4S1	TP421	S-4-01	TC-11	Audio Coupling
13	.005	400	25116	484-005	DT6D5	TP408	S-6-005	TC-25	Tone Compensation
14	.005	400	25116	484-005	DT6D5	TP408	S-6-005	TC-25	Audio Coupling
15	.05	200	25111	484-05	DT4S5	TP426	S-4-05	TC-15	IF Cath. Bypass
16	.05	200	25102	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
17	.05	200	25102	484-05	DT4S5	TP426	S-4-05	TC-15	Screen Bypass
18	.1	400	25103	484-.1	DT4P1	TP428	S-4-1	TC-1	RF Bypass Pwr. Supp.
19	.05	200	25111	484-05	DT4S5	TP426	S-4-05	TC-15	RF Cath. Bypass
20	.01	200	25112	484-01	DT4S1	TP421	S-4-01	TC-11	RF Coupling
21	100	500	25188	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Audio Plate Bypass
22	2000	300	25119	1467-002	1W5D2	MC457	MW.5-32	1FM-32	Tone Compensation
23	420	500	25124						Fixed Trimmer
24	100	500	25188	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Osc. Grid Capacitor
25	20	500	25121						Fixed Trimmer
26	500	500	25189	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	Fixed Padder
27	500	500	25189	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	RF Coupling
28	100	500	25188	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Fixed Padder

CONTROLS

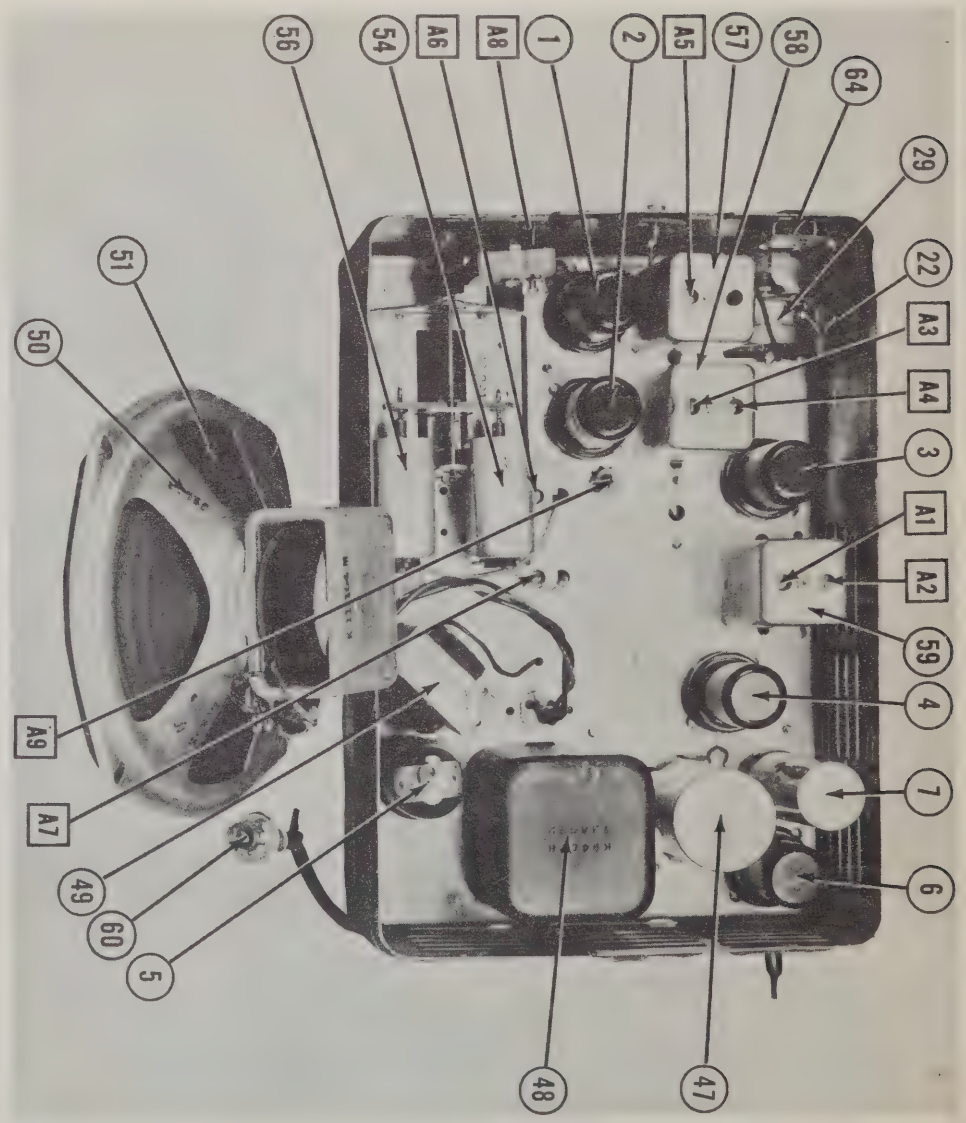
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
29A	500KΩ	1	78042	TM233	D18-133X	AT-88	Volume Control
B	Shaft		Not Req.	SS23	A*	RS-2*	Attach to 29A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
30	50 to 800Ω	1	78031				Sensitivity Control

*File shaft to duplicate original.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	IRC PART No.	IDENTIFICATION CODES
31	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Antenna Loading
32	1 Meg.	½	77181	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
33	1 Meg.	½	77181	BTS-1 Meg.	Br.-Blk.-Grn. " "
34	10KΩ	½	77180	BTS-10K	Br.-Blk.-Or. RF Plate Load
35	1 Meg.	½	77181	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
36	22KΩ	½	77069	BTS-22K	Red-Red-Or. Oscillator Grid
37	22KΩ	1	77069	BTA-22K	Red-Red-Or. Screen Dropping
38	100Ω	½	77176	BW-½-100	Br.-Blk.-Br. IF Cathode
39	33KΩ	½	77186	BTS-33K	Or.-Or.-Or. Tone Compensation
40	10 Meg.	½	77182	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
41	220KΩ	½	77178	BTS-220K	Red-Red-Yl. AF Plate Load
42	470KΩ	½	77173	BTS-470K	Yl.-Vi.-Yl. Output Grid
43	330Ω	½	77179	BW-½-330	Or.-Or.-Br. Output Cathode
44	1000Ω	1	77133	BTA-1000	Br.-Blk.-Red Filter
45	100Ω	½	77176	BW-½-100	Br.-Blk.-Br. Hash Suppression
46	100Ω	½	77176	BW-½-100	Br.-Blk.-Br. " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: AIR CHIEF PART No.	MALLORY PART No.	RADIART PART No.	INSTALLATION NOTES
47	Interrupter	6.3	115~	76001	259	5301	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: AIR CHIEF PART No.	STANCOR PART No.	THORDARSON PART No.	INSTALLATION NOTES
48	5.3V CT @ 3.0A	530V CT @ .047A			94078	P-4060 ‡	T22R20 ‡	‡ Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIR CHIEF PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
49	4000Ω	3.3Ω	375Ω	.45Ω	94080	A-3877	T22S46		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIR CHIEF PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.				
50	4.1Ω	3.3Ω	11164			
	CONE DIA.	VC DIA.				
51	6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIR CHIEF PART No.	MEISSNER PART No.	
52	Ant. RF Choke		.7Ω	38279		
53	Ant. Coil		7Ω	38281		Items 53, 54, and 55 are ganged together and slug tuned.
54	RF Coil		7.2Ω	38281		
55	Osc. Shunt Coil		2.9Ω	38281		
56	Osc. Coil		3.1Ω	38280		
57	Wave Trap			38285		
58	Input IF	11.5Ω	11.5Ω	38274	16-6658	
59	Output IF	12.5Ω		38275	16-6670	

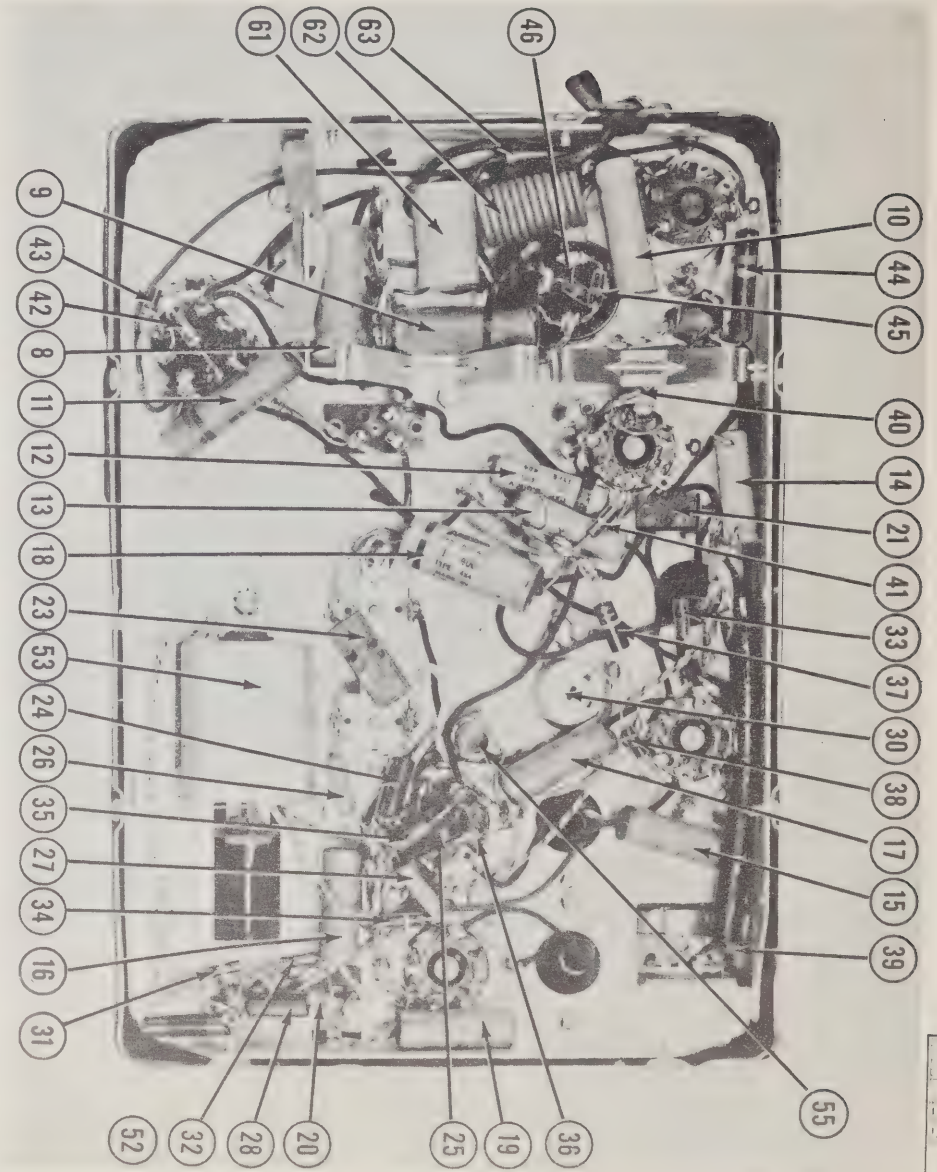
DIAL LIGHT

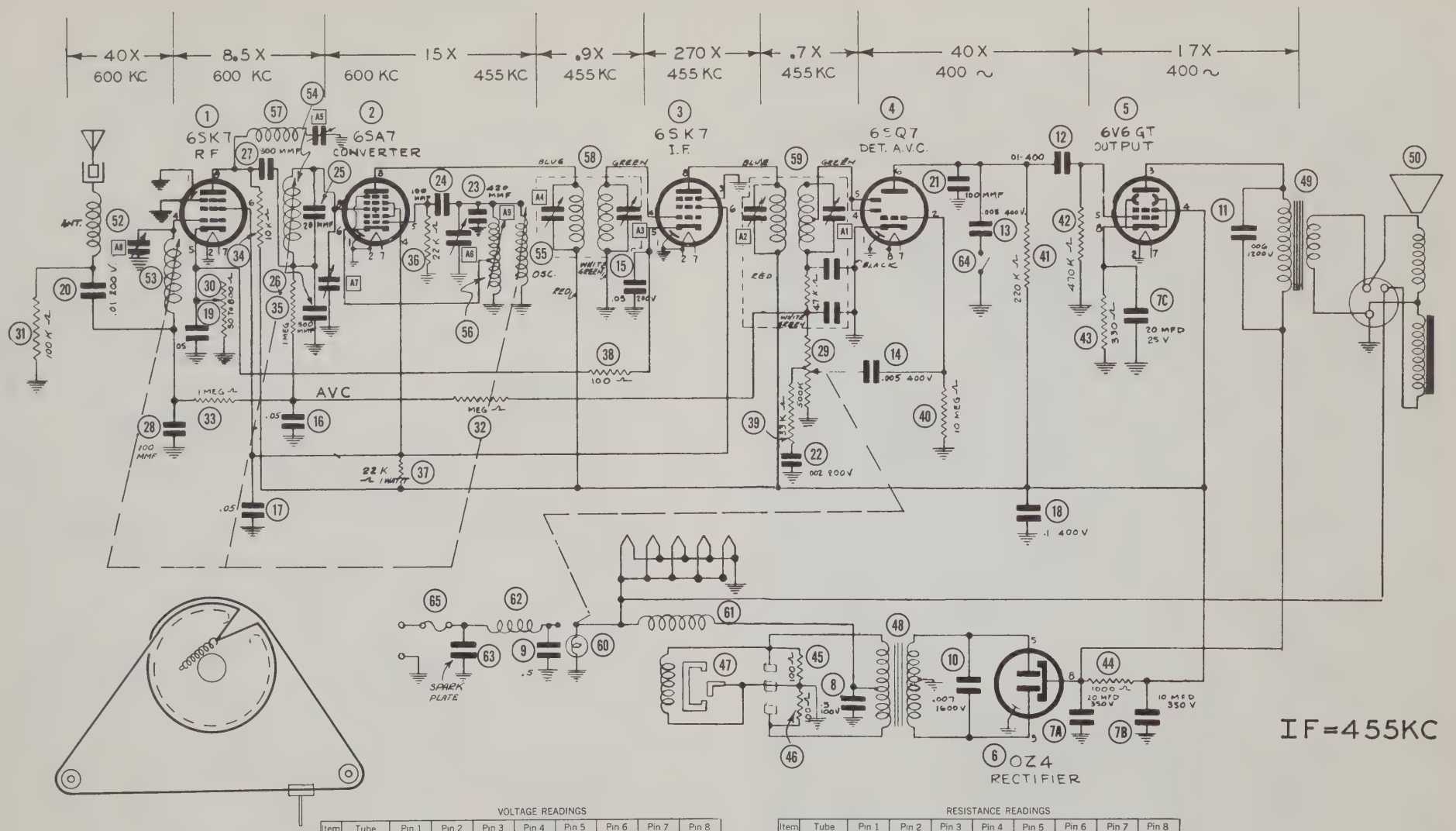
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIR CHIEF PART No.		INSTALLATION NOTES
60	Bayonet	7.5	0.20	White			Type 51

MISCELLANEOUS

ITEM No.	PART NAME	AIR CHIEF PART No.	NOTES
61	Vibrator Choke	38277	
62	"A" Supply Choke	38278	
63	Spark Plate	25100	
64	Tone Switch	90071	
65	Fuse	48007	20 Amp.
A6 } A7 }	Trimmer Strip	26116	Osc. Adj. RF Adj.
A8	Trimmer	[illegible]	[illegible]

CHASSIS—BOTTOM VIEW





DIAL CORD DRIVE

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	0V.	-1V.DC	-.6V.DC	55V.DC	5.9V.DC	150V.DC
2	6SA7	0V.	0V.	200V.DC	55V.DC	-.25V.DC	0V.	5.9V.DC	-.45V.DC
3	6SK7	0V.	0V.	0V.	0V.	-1.2V.DC	55V.DC	5.9V.DC	200V.DC
4	6SQ7	0V.	-.2V.DC	0V.	-.32V.DC	-.32V.DC	105V.DC	5.9V.DC	0V.
5	6V6GT	0V.	5.9V.DC	208V.DC	200V.DC	0V.	220V.DC	0V.	11V.DC
6	OZ4	0V.	0V.	245VAC	0V.	245VAC	0V.	0V.	220V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	0Ω	.22MEG.	55Ω	310KΩ	.1Ω	300KΩ
2	6SA7	0Ω	0Ω	290KΩ	310KΩ	22KΩ	.5Ω	.1Ω	2.2MEG.
3	6SK7	0Ω	0Ω	0Ω	0Ω	130Ω	310KΩ	.1Ω	290KΩ
4	6SQ7	0Ω	10MEG.	0Ω	450KΩ	450KΩ	500KΩ	.1Ω	0Ω
5	6V6GT	0Ω	.1Ω	290KΩ	290KΩ	420KΩ	290KΩ	0Ω	310Ω
6	OZ4	0Ω	INF.	180Ω	INF.	200Ω	INF.	INF.	290KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

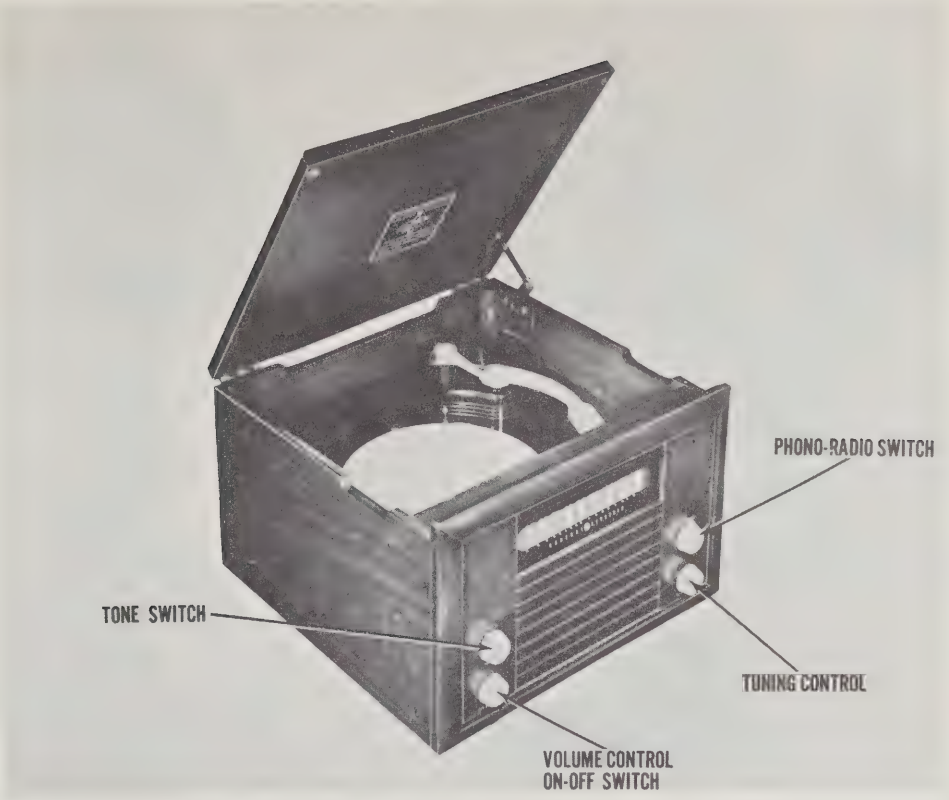
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

478-18

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 3 volts to the AVC line.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

GENERAL-ELECTRIC
MODEL 303



GENERAL-ELECTRIC
MODEL 303

GENERAL ELECTRIC MODEL 303

TRADE NAME	General Electric, Model 303
MANUFACTURER	General Electric Co., Appl. & Merch. Dept., Bridgeport, Conn.
TYPE SET	AC Operated Phono-Radio Combination-Superheterodyne -Self Contained Loop Antenna
TUBES (SIX)	Types, 6SB7-Y Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6SC7 Phono Pre-Amp., 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	540-1600KC RATING .570 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning control until slugs are fully in. Set the pointer at an arbitrary point near the left end of the dial backplate and mark it. This is the reference mark referred to in Step 5. After installation in the cabinet turn the tuning control until the slugs are completely out. Set pointer to last reference mark at the right end of the dial, and secure it firmly. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD.	High side to Pin 4 (grid) of 6SK7, IF Tube. Low side to chassis.	455KC	Tuning slugs fully out.	Across voice coil.	A1,A2,	Adjust for maximum output.
.05 MFD.	High side to Pin 6 (grid) of 6SB7Y. Low side to chassis.	"	"	"	A3,A4. A1,A2.	" " " "
200MMFD	High side to ant. post. Low side to chassis.(Shorting link removed)	1620KC	"	"	A5	" " " "
200MMFD.	"	"	"	"	A6	" " " "
200MMFD.	"	1500KC	5¼" from reference mark at left end of dial backplate	"	A7	" " " "
200MMFD.	"	1000KC	Tune for maximum output.	"	A8	Adjust for maximum output. Repeat last four steps (3,4,5,6). Replace shorting link.

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		GENERAL ELECTRIC PART No.	STANDARD REPLACEMENT		
1	Converter	6SB7-Y	6SB7-Y	8R	
2	IF Amp.	6SK7	6SK7	8N	
3	Det.-AVC-AF	6SQ7	6SQ7	8Q	
4	Phono Pre-Amp.	6SC7	6SC7	8S	
5	Power Output	6V6GT	6V6GT	7AC	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	GENERAL ELECTRIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	
7A	30	350	RCE-033		UP9DJ53	FP429	DY-403	EL-424	● Filter
B	30	350							■ "
C	15	250							▲ "
D	20	25							Cath. Bypass
8	.003	1000	UCC-057	1084-003	MD16D3	TP457	TM-10-003	TR-23	Output Plate Bypass
9	.02	600	UCC-041	684-02	DT6S2	TP412	S-6-02	TC-12	Audio Coupling
10	.01	600	UCC-040	684-01	DT6S1	TP410	S-6-01	TC-11	" "
11	.007	600	RCC-001	684-007		TP445			Tone Compensation
12	.001	600	UCC-035	684-001	DT6D1	TP404	S-6-001	TC-21	" "
13	.001	600	UCC-035	684-001	DT6D1	TP404	S-6-001	TC-21	" "
14	.005	600	UCC-039	684-005	DT6D5	TP408	S-6-005	TC-25	Audio Coupling
15	.02	600	UCC-041	684-02	DT6S2	TP412	S-6-02	TC-12	IF Plate Decoupling
16	.01	600	UCC-040	684-01	DT6S1	TP410	S-6-01	TC-11	Conv. Screen Bypass
17	.05	600	UCC-045	684-05	DT6S5	TP415	S-6-05	TC-15	Phono Coupling
18	.01	600	UCC-040	684-01	DT6S1	TP410	S-6-01	TC-11	Audio Coupling
19	.01	600	UCC-040	684-01	DT6S1	TP410	S-6-01	TC-11	Tone Compensation
20	.05	600	UCC-045	684-05	DT6S5	TP415	S-6-05	TC-15	AVC Filter
21	470	500	UCU-044	1468-0005	5W5T5	MC245	MO.5-347	1FM-35	Audio Plate Bypass
22	47	500	UCU-020	1468-00005	5W5Q5	MC225	MO.5-447	1FM-45	Osc. Grid Capacitor
23	6.8		UCN-506						RF Coupling Cer.

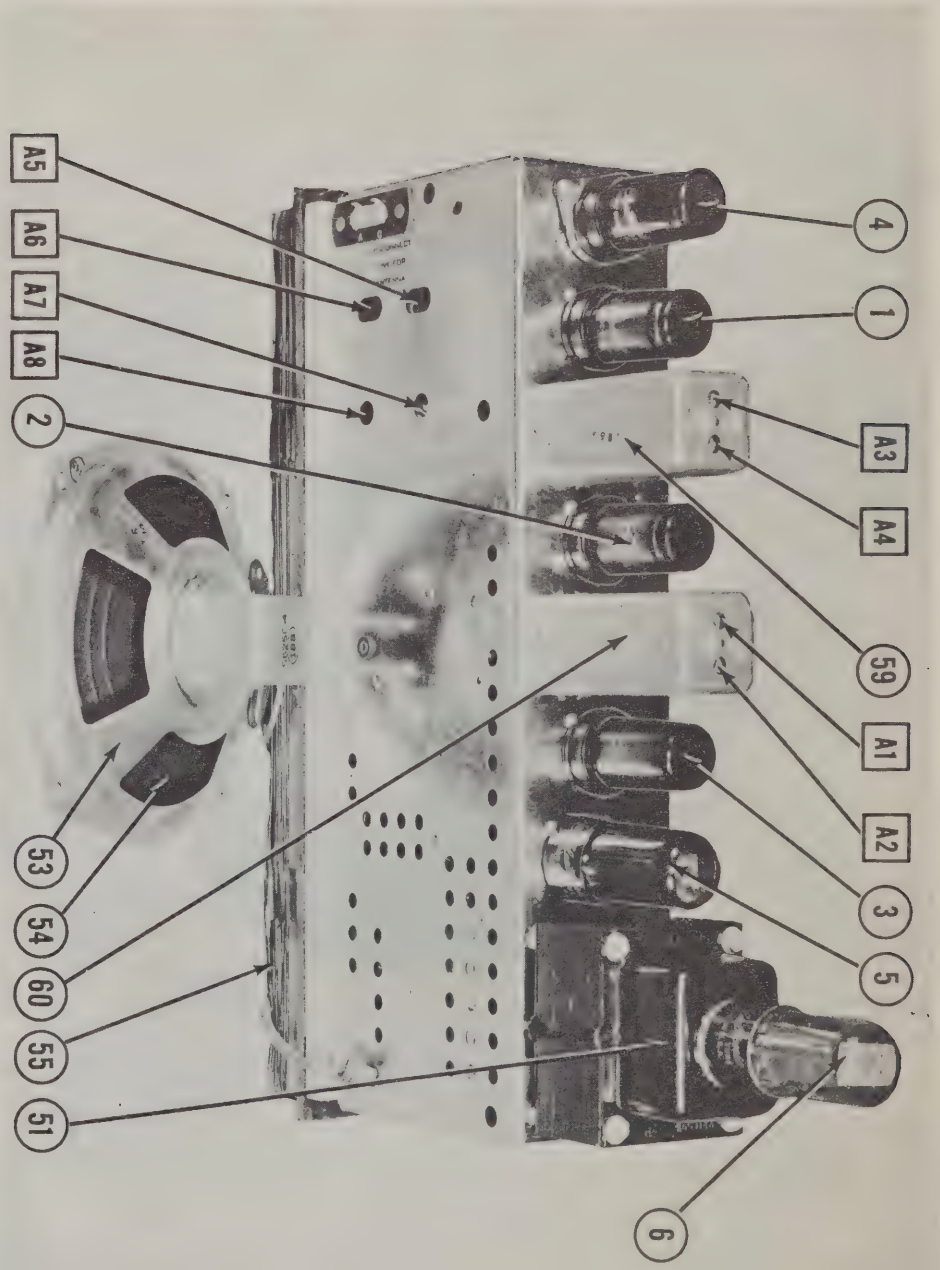
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	GENERAL ELECTRIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
24A	2 Meg.	1	RRC-029	TM251	D18-139X	AT-116	Volume Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 24A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	GENERAL ELECTRIC PART No.	IRC PART No.	
25	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn. Antenna Loading
26	22KΩ	½	URD-081	BTS-22K	Red-Red-Or. Oscillator Grid
27	470Ω	½		BTS-470	Yl.-Vi.-Br. Screen Decoupling
28	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
29	2200Ω	½	URD-057	BTS-2200	Red-Red-Red IF Plate Decoupling
30	220KΩ	½	URD-105	BTS-220K	Red-Red-Yl. Diode Load
31	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. Tone Compensation
32	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. Tone Compensation
33	10 Meg.	½	URD-145	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
34	470KΩ	½	URD-113	BTS-470K	Yl.-Vi.-Yl. AF Plate Load

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	GENERAL-ELECTRIC PART No.	IRC PART No.	
35	470KΩ	½	URD-113	BTS-470K	Yl.-Vl.-Yl. Output Grid
36	330Ω	1	URE-037	Bw-1-330	Or.-Or.-Br. Output Cathode
37	5600Ω	½	URD-067	BTS-5600	Grn.-Blue-Red Tone Compensation
38	1500Ω	½	URD-053	BTS-1500	Br.-Grn.-Red Feedback
39	100Ω	½	URD-025	Bw-½-100	Br.-Blk.-Br. Feedback
40	2200Ω	2	URF-057	BT-2-2200	Red-Red-Red Filter
41	2200Ω	½	URD-057	BTS-2200	Red-Red-Red Phono Shunt
42	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Or.-Or.-Grn. 1st Phono Amplifier Grid
43	68KΩ	½	URD-093	BTS-68K	Blue-Gray-Or. 1st Phono Amplifier Plate Load
44	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. 2nd Phono Amplifier Plate Load
45	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Or.-Or.-Grn. 2nd Phono Amplifier Grid
46	330KΩ	½	URD-109	BTS-330K	Or.-Or.-Yl. Tone Compensation
47	27KΩ	½	URD-083	BTS-27K	Red-Vl.-Or. " "
48	180KΩ	½	URD-103	BTS-180K	Br.-Gray-Yl. " "
49	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. Decoupling
50	12KΩ	2	URF-075	BT-2-12K	Br.-Red-Or. Voltage Dropping

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	GENERAL ELECTRIC PART No.	STANCOR PART No.	THORDARSON PART No.	
51	117V AC @ .57A	560V CT @ .057A	5.0V AC @ 1.8A	6.3V AC @ 1.8A	RTP-021			

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GENERAL ELECTRIC PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
52	6800Ω	3.5Ω	400Ω	.55Ω	RTO-013	A-3878*	T22S47*		*Drill one new mounting hole.

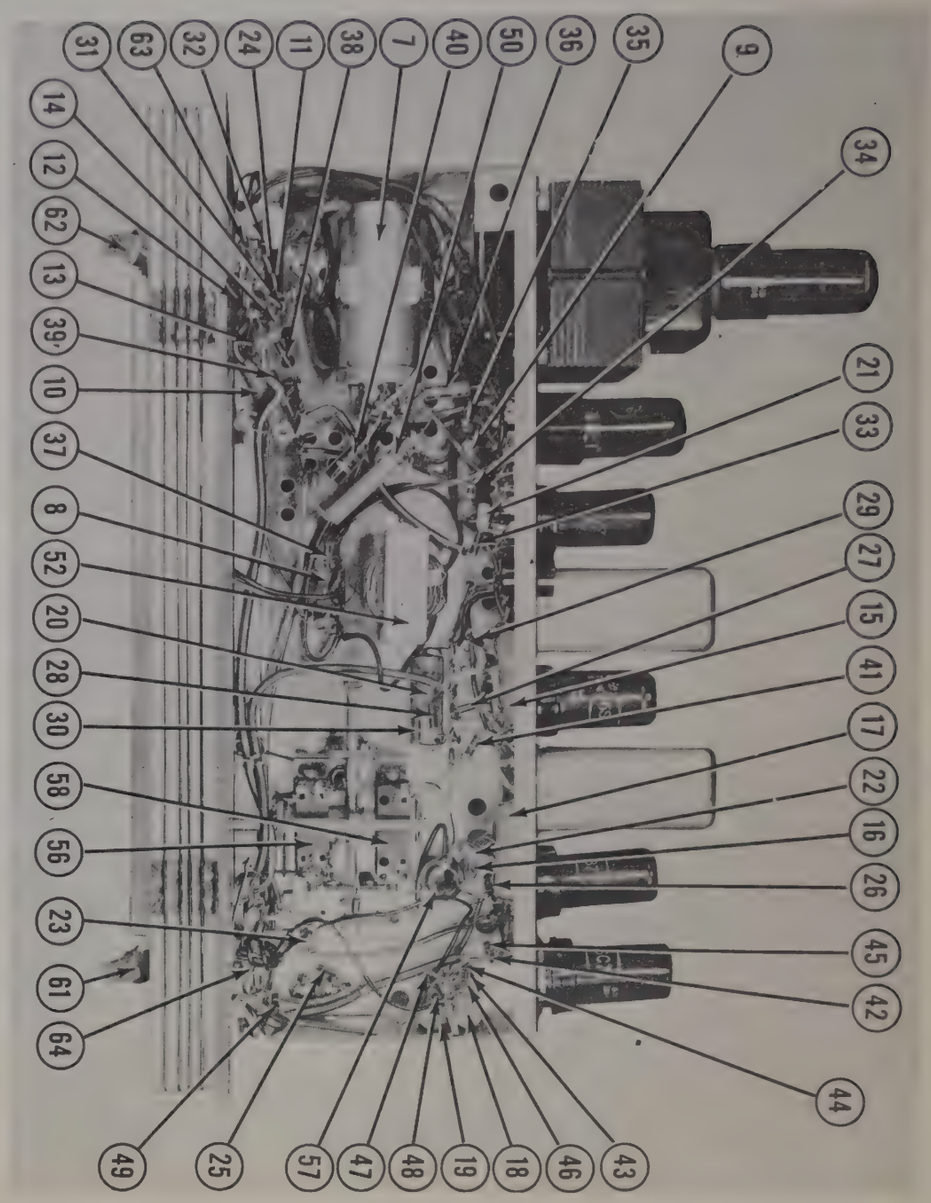
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GENERAL ELECTRIC PART No.	JENSEN PART No.	UTAH PART No.	
	FIELD	VC IMP.		ST-108		
53	PM	3.5Ω	UOP-628	Mod. P6-X		
	CONE DIA.	VC DIA.				
54	6"	5/8"	UOX-001			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	GENERAL ELECTRIC PART No.	MEISSNER PART No.
55	Loop Ant.		.1Ω	RLL-011	
56	Ant. Coil	.4Ω	7Ω	RLA-010	
57	Osc. Coil		3.5Ω	RLC-019	14-1040
58	Osc. Shunt Coil		3Ω	RLC-020	
59	Input IF	16Ω	16.5Ω	RTL-021	16-6658
60	Output IF	18.5Ω		RTL-020	16-6670

CHASSIS—BOTTOM VIEW



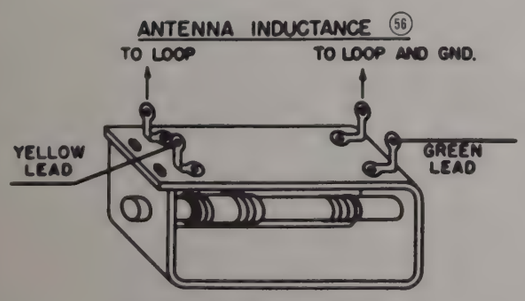
PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

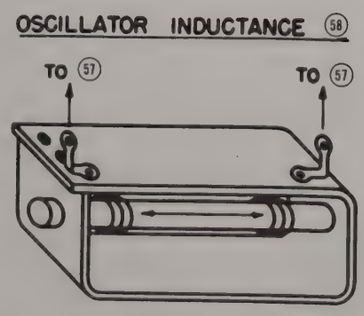
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					GENERAL ELECTRIC PART No.		
61	Bayonet	6.3	0.15	Brown			Type 47
62	"	"	"	"			"

MISCELLANEOUS

ITEM No.	PART NAME	GENERAL ELECTRIC PART No.	NOTES
63	Switch	RSW-019	Tone Control
64	"	RSW-018	Radio-Phono
	Pointer	RDP-014	
	Dial Scale	RDS-020	
A5	Trimmer	RCY-014	220-275 MMF (Osc. Trimmer)
A6	"	RCY-013	20-75 MMF (Ant. Trimmer)



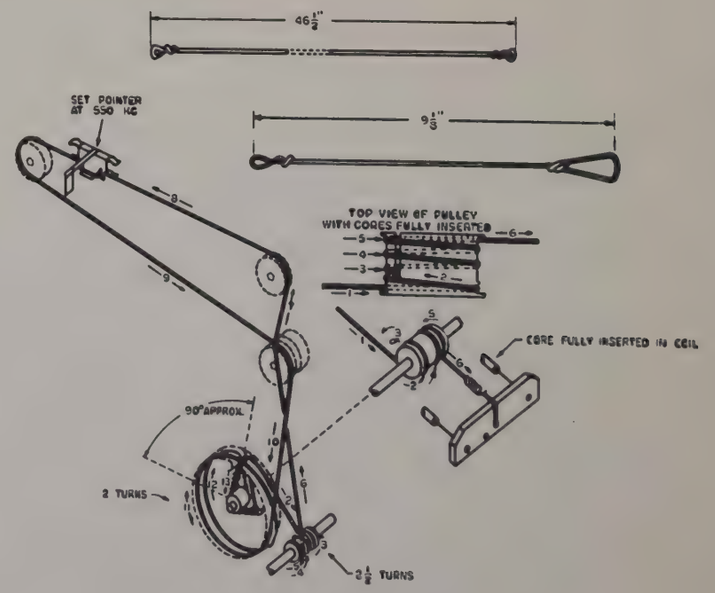
VIEW FROM REAR OF CHASSIS



VIEW FROM REAR OF CHASSIS

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove three hex nuts mounting chassis to cabinet.
3. Remove phono-pickup plug from chassis.
4. Remove phono-motor plug from chassis.
5. Remove chassis from cabinet.

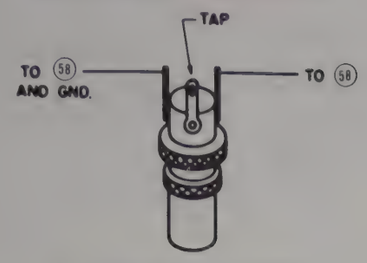


DIAL CORD DRIVE

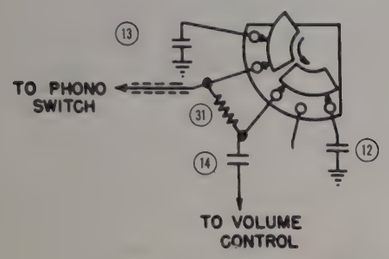
RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

OSCILLATOR PADDER COIL (57)

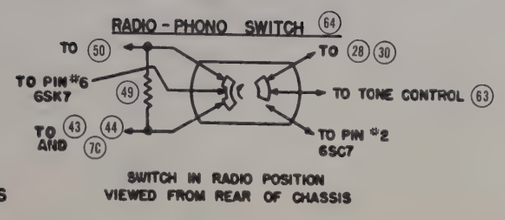


VIEW FROM REAR OF CHASSIS



KNOB IN "NUMBER 1" POSITION
SWITCH VIEWED FROM BACK OF CHASSIS

Tone Control Switch, (63)



SWITCH IN RADIO POSITION
VIEWED FROM REAR OF CHASSIS

Radio-Phono Switch, (64)

VOLTAGE READINGS

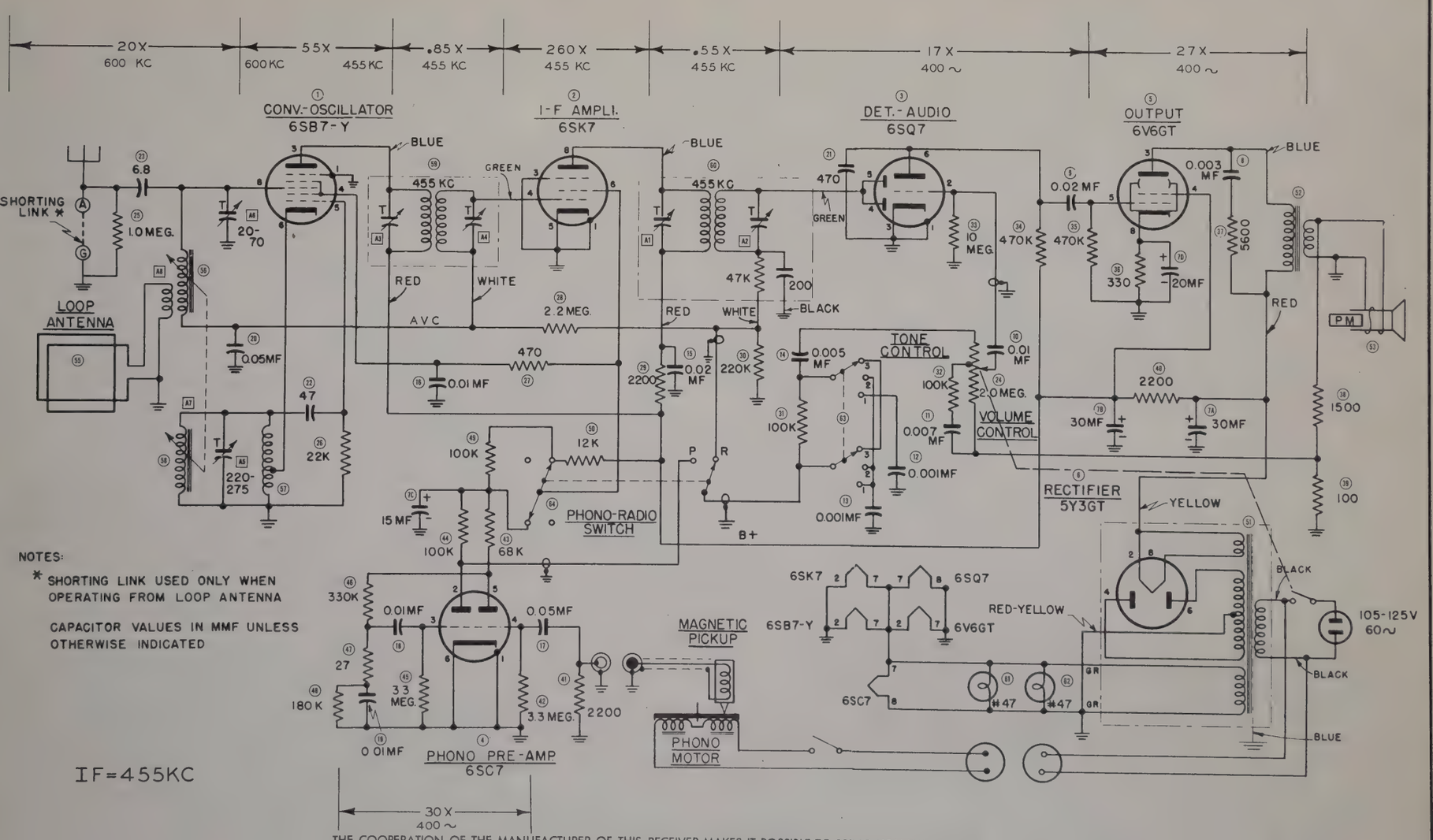
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SB7Y	0V.	0V.	225V.DC	87V.DC	-5V.DC	0V.	6.3V.AC	-1V.DC
2	6SK7	0V.	0V.	0V.	-1V.DC	0V.	90V.DC	6.3V.AC	198V.DC
3	6SQ7	0V.	-.47V.DC	0V.	-.45V.DC	-.45V.DC	82V.DC	6.3V.AC	0V.
4	6SC7	0V.	70V.DC	-.52V.DC	-.4V.DC	62V.DC	0V.	6.3V.AC	0V.
5	6V6GT	0V.	6.3V.AC	280V.DC	228V.DC	0V.	0V.	0V.	12V.DC
6	5Y3GT	0V.	300V.DC	0V.	280VAC	0V.	280VAC	0V.	300V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SB7Y	0Ω	0Ω	80KΩ	100KΩ	18KΩ	.2Ω	1Ω	2.4MEG.
2	6SK7	0Ω	0Ω	0Ω	2.4MEG.	0Ω	80KΩ	1Ω	80KΩ
3	6SQ7	0Ω	10MEG.	0Ω	220KΩ	220KΩ	500KΩ	1Ω	0Ω
4	6SC7	0Ω	170KΩ	3.1MEG.	3.1MEG.	145KΩ	0Ω	1Ω	0Ω
5	6V6GT	0Ω	.1Ω	80KΩ	80KΩ	420KΩ	INF.	0Ω	300Ω
6	5Y3GT	INF.	80KΩ	INF.	190Ω	INF.	200Ω	INF.	80KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



NOTES:

* SHORTING LINK USED ONLY WHEN OPERATING FROM LOOP ANTENNA

CAPACITOR VALUES IN MMF UNLESS OTHERWISE INDICATED

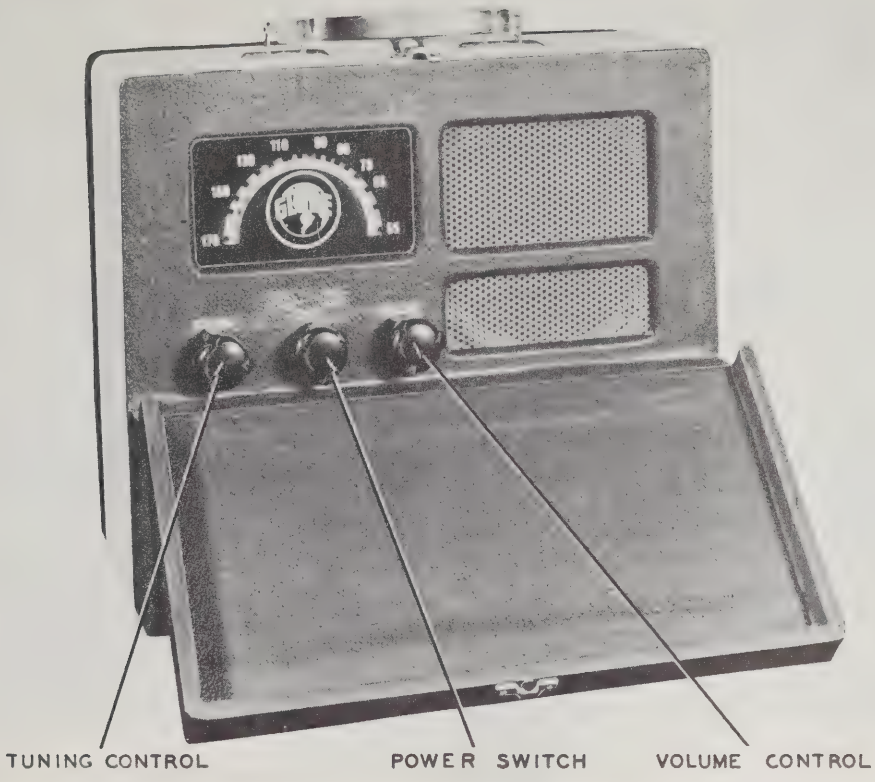
IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

478-19

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

GLOBE
MODEL 5 BP 1 (BATTERY OPERATED)



GLOBE
MODEL 5 BP 1 (BATTERY OPERATED)

GLOBE MODEL 5BP1

TRADE NAME	Globe, Model 5BP1
MANUFACTURER	Globe Electronics, Inc., 225 W. 17th St., New York, N.Y.
TYPE SET	Three Power Portable Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types, 1A7GT or 1R5 Converter, 1N5GT or 1T4 IF Amp., 1H5GT or 1S5 Det.-AVC-AF, 3Q5GT or 3Q4 Power Output, 117Z3 Rectifier.
POWER SUPPLY RATING	110-120 Volts AC-DC or 7½ Volt "A" Battery & 90 Volt "B" Battery in Pack Form .170 Amp. @ 117 Volts AC or 59MA @ 7.6 Volts DC and 10 MA @ 93 Volts DC
TUNING RANGE—BROADCAST	550-1700KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Battery power should be used when available. If AC power is used, an isolation transformer should be used. If not available connect a capacitor in series with low side of signal generator and chassis. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to front stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to .001 MFD to reduce hum modulation.
2	200MMFD	High side to ext. ant. lead. Low side to chassis.	1700KC	"	"	A5	Adjust for maximum output.
3	200MMFD	"	1400KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

GLOBE MODEL 62PB

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GLOBE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1A	Converter	1A7GT	1A7GT	7Z	
B	"	1R5	1R5	7AT	
2A	IF Amp.	1N5GT	1N5GT	5Y	
B	" "	1T4	1T4	6AR	
3A	Det.-AVC-AF	1H5GT	1H5GT	5Z	
B	"	1S5	1S5	6AU	
4A	Power Output	3Q5GT	3Q5GT	7AP	
B	" "	3Q4	3Q4	7BA	
5	Rectifier	117Z3	117Z3	4BR	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GLOBE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6	50	150		PRS150-50	BR5015	TC49	M-50-150	UT-501	Filter
7	50	150		PRS150-50	BR5015	TC49	M-50-150	UT-501	"
8A	10	25		PRS25-10-10	BR202A	TN111	M-2x10-25	TA-110	Filament Bypass
B	10	25							" "
9	.02	400		484-02	DT4S2	TP423	S-4-02	TC-12	Line Filter
10	.005	600		684-005	DT6D5	TP408	S-6-005	TC-25	Output Plate Bypass
11	.02	400		484-02	DT4S2	TP423	S-4-02	TC-12	Audio Coupling
12	.1	400		484-.1	DT4P1	TP428	S-4-1	TC-1	Audio Plate Decoup.
13	.005	600		684-005	DT6D5	TP408	S-6-005	TC-25	Audio Coupling
14	.05	200		484-05	DT4S5	TP426	S-4-05	TC-15	IF Grid Filter
15	.1	400		484-.1	DT4P1	TP428	S-4-1	TC-1	Filament Bypass
16	.05	200		484-05	DT4S5	TP426	S-4-05	TC-15	Conv. Screen Bypass
17	.05	200		484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
18	.01	400		484-01	DT4S1	TP421	S-4-01	TC-11	Ext. Ant. Coupling
19	200	500		1468-0002	5W5T2	MC237	MO.5-32	1FM-32	Audio Plate Bypass
20	200	500		1468-0002	5W5T2	MC237	MO.5-32	1FM-32	IF Bypass Vol. Cont.
21	200	500		1468-0002	5W5T2	MC237	MO.5-32	1FM-32	Osc. Grid Capacitor

CONTROLS

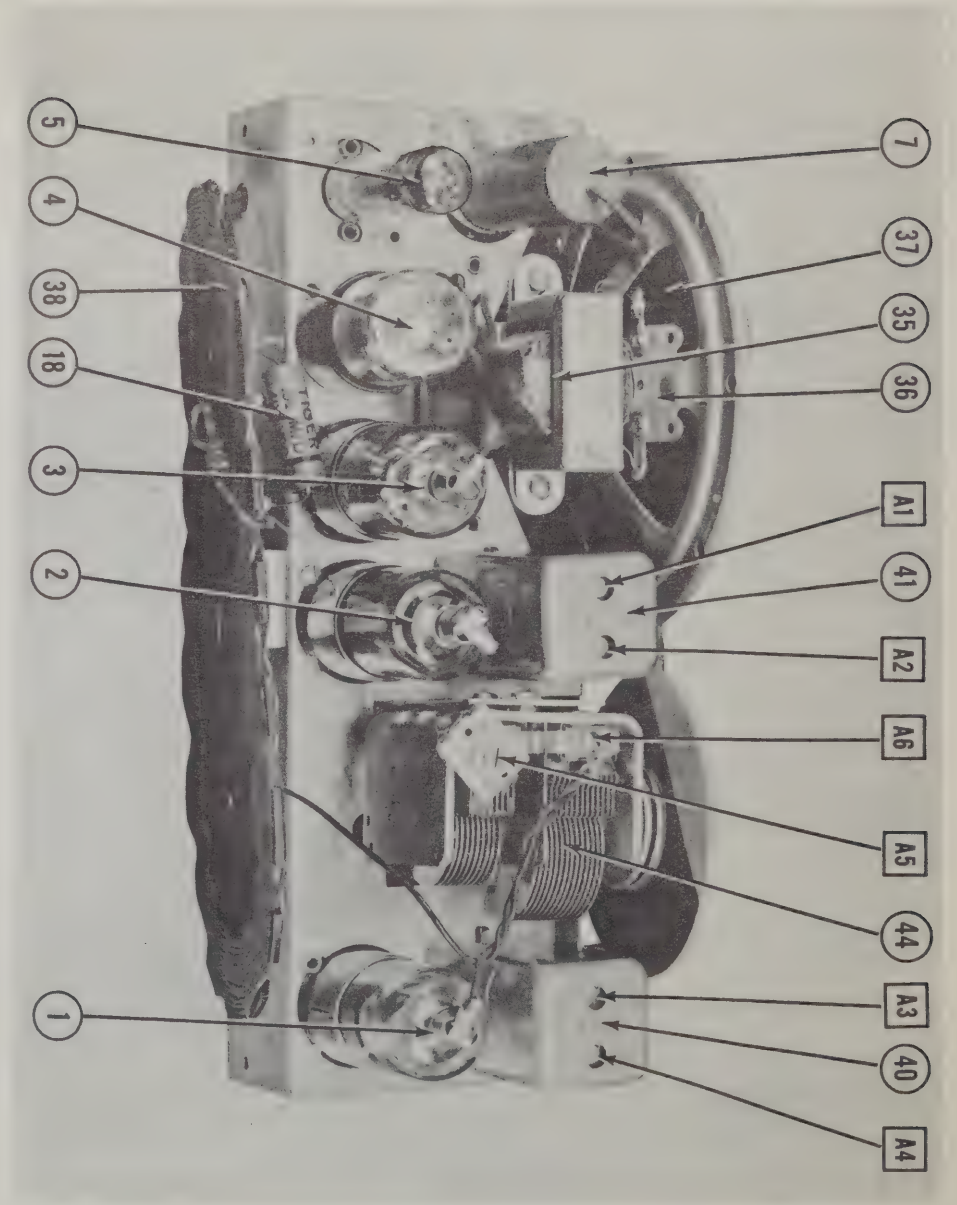
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GLOBE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	750KΩ	1		MR50	D11-137	M-58-S	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 22A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GLOBE PART No.	IRC PART No.	IDENTIFICATION CODES
23	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn. AVC Network
24	220KΩ	½		BTS-220K	Red-Red-Yl. Oscillator Grid
25	68KΩ	½		BTS-68K	Blue-Gray-Or. Convertor Screen Dropping
26	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. IF Grid
27	750Ω	½		BTS-820	Vi.-Grn.-Br. Filament String
28	2000Ω	½		BTS-2200	Red-Blk.-Red Filament String
29	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
30	330KΩ	½		BTS-330K	Or.-Or.-Yl. AF Plate Load
31	330KΩ	½		BTS-330K	Or.-Or.-Yl. AF Plate Decoupling
32	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
33	1000Ω	½		BTS-1000	Br.-Blk.-Red Filament String
34A	1800Ω	20		DHA-2000	" " -See Note
B	200Ω				Filter

Note-On IRC replacement set slider at 200Ω from one end.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GLOBE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
35	6000Ω	3.3Ω	330Ω	.6Ω		A-3879	T22S4C		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GLOBE PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-105		
36	PM	3.2Ω		Mod. P5-X		
	CONE DIA.	VC DIA.				
37	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

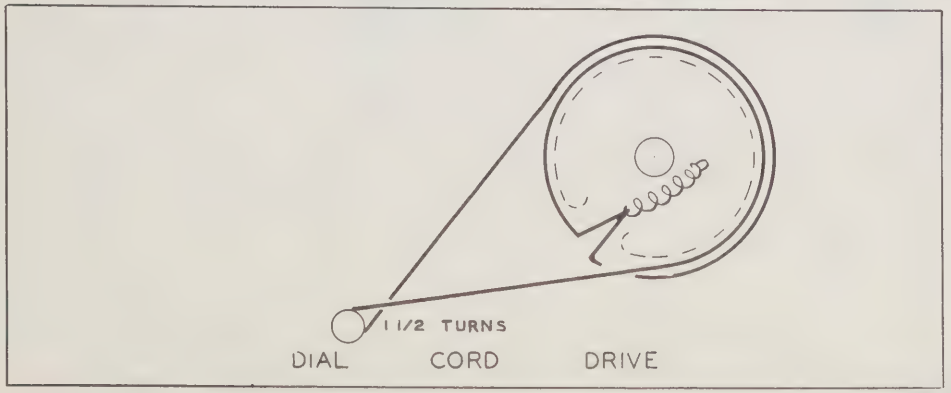
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	GLOBE PART No.	MEISSNER PART No.	
38	Loop Ant.	.1Ω	1.2Ω			
39	Osc. Coil	1Ω	8Ω		14-1040	
40	Input IF	24Ω	16.5Ω	S-103	16-6658	
41	Output IF	14.5Ω	14.5Ω	S-104	16-6660	

BATTERIES

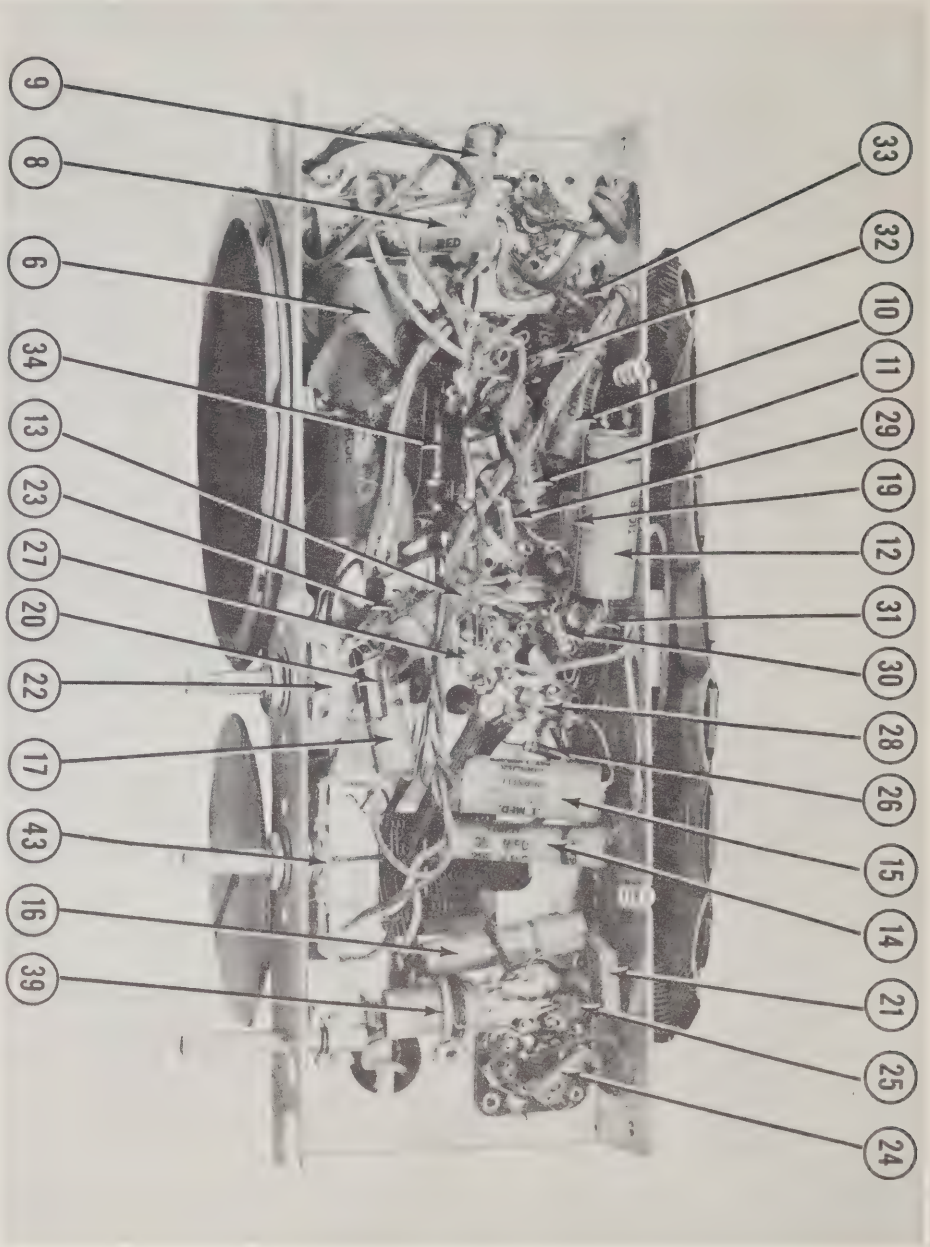
ITEM No.	VOLTAGE	GLOBE PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
42	7.5V "A" 90V "B"				No. 754	

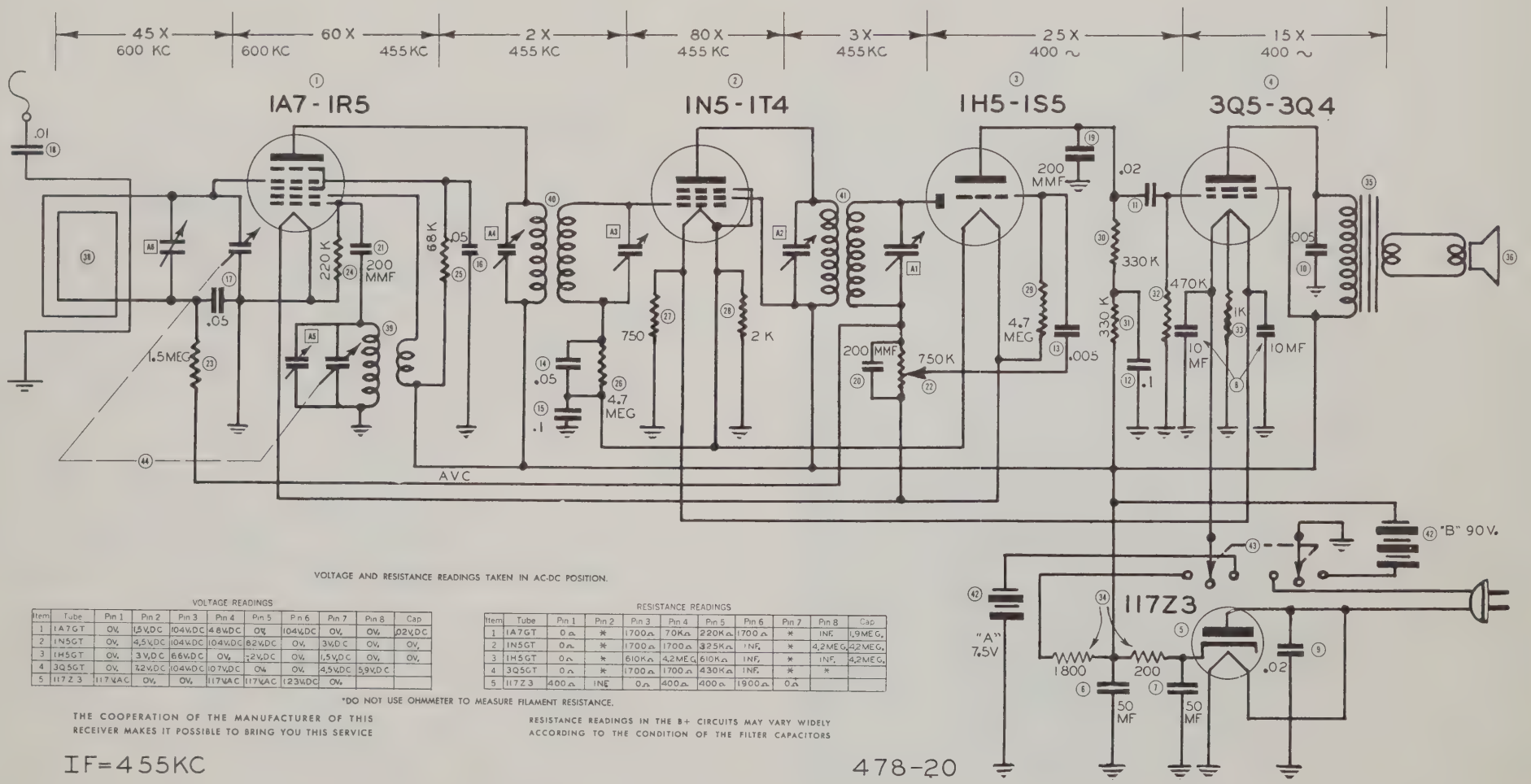
MISCELLANEOUS

ITEM No.	PART NAME	GLOBE PART No.	NOTES
43	Switch		Power Change-Over
44	2 Gang Var. Cap		33-501 MMF, 37-204 MMF



CHASSIS—BOTTOM VIEW





VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0V.	1.5V.DC	104V.DC	48V.DC	0V.	104V.DC	0V.	0V.	.02V.DC
2	1N5GT	0V.	4.5V.DC	104V.DC	104V.DC	82V.DC	0V.	3V.DC	0V.	0V.
3	1H5GT	0V.	3V.DC	66V.DC	0V.	2V.DC	0V.	1.5V.DC	0V.	0V.
4	3Q5GT	0V.	42V.DC	104V.DC	107V.DC	0V.	0V.	4.5V.DC	5.9V.DC	
5	117Z3	117V.AC	0V.	0V.	117V.AC	117V.AC	123V.DC	0V.		

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0 Ω	*	1700 Ω	70 KΩ	220 KΩ	1700 Ω	*	INF.	1.9 MEG.
2	1N5GT	0 Ω	*	1700 Ω	1700 Ω	325 KΩ	INF.	*	4.2 MEG.	4.2 MEG.
3	1H5GT	0 Ω	*	610 KΩ	4.2 MEG.	610 KΩ	INF.	*	INF.	4.2 MEG.
4	3Q5GT	0 Ω	*	1700 Ω	1700 Ω	430 KΩ	INF.	*	*	
5	117Z3	400 Ω	INF.	0 Ω	400 Ω	400 Ω	1900 Ω	0 Ω		

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

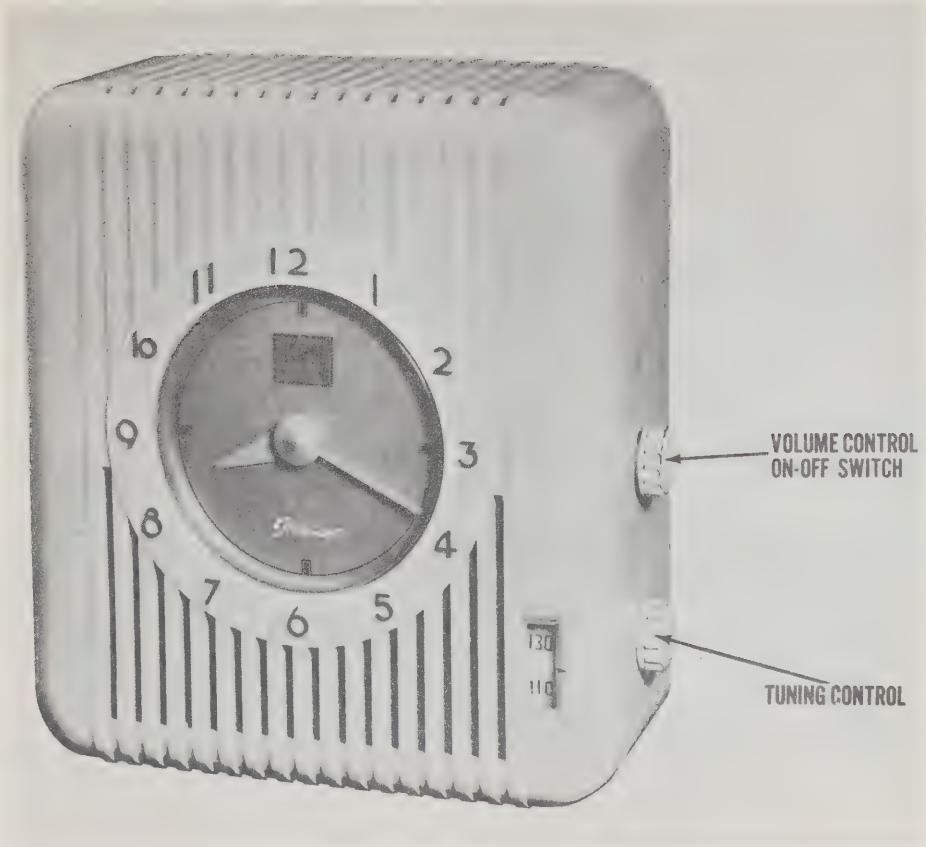
IF=455KC

478-20

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to low end of volume control.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

JEWEL
MODEL 505 "PIN UP"



JEWEL
MODEL 505 "PIN UP"

JEWEL MODEL 505

TRADE NAME	Jewel, Model 505 "Pin-Up"
MANUFACTURER	Jewel Radio Corp., Inc., 583 Ave. of the Americas, New York 11, N.Y.
TYPE SET	AC Operated Superheterodyne Receiver with Electric Clock
TUBES (FOUR)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1725KC RATING .270 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a capacitor in series with low side of signal generator and chassis. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	[illegible] to ext. ant. lead. Low [illegible] to chassis.	[illegible] KC	Tuning cap. fully open.	Across voice coil	[illegible], [illegible], [illegible], [illegible].	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001 MFD to reduce hum modulation.
[illegible]	"	1[illegible] KC	"	"	[illegible]	Adjust for maximum output.
50 MMFD	"	[illegible] KC	Tune for maximum [illegible].	"	[illegible]	" " " "

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PARTS LIST AND DESCRIPTIONS

JEWEL MODEL 505 "PIN UP"

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		JEWEL PART No.	STANDARD REPLACEMENT		
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7CC	
3	Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50B5	50B5	7BZ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	JEWEL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	
5A	20	150		PRSA150-40-	BRD4215	2N514	M-2x40-150	TA-240	Filter - Blue
B	40	150		20				"	- Red
6	.05	200		484-05	DT4S5	TP426	S-4-05	TC-15	Line Filter
7	.01	400		484-01	DT4S1	TP421	S-4-01	TC-11	Output Plate Bypass
8	.02	400		484-02	DT4S2	TP423	S-4-02	TC-12	Audio Coupling
9	.005	400		484-005	DT6D5	TP408	S-6-005	TC-25	" "
10	.05	400		484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
11	250	500		1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Output Grid Filter
12	250	500		1468-00025	5W5T25	MC240	MO.5-325	1FM-325	IF Bypass Vol. Cont.
13	50	500		1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	Osc. Grid Capacitor
14	50	500		1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	Ext. Ant. Coupling

CONTROLS

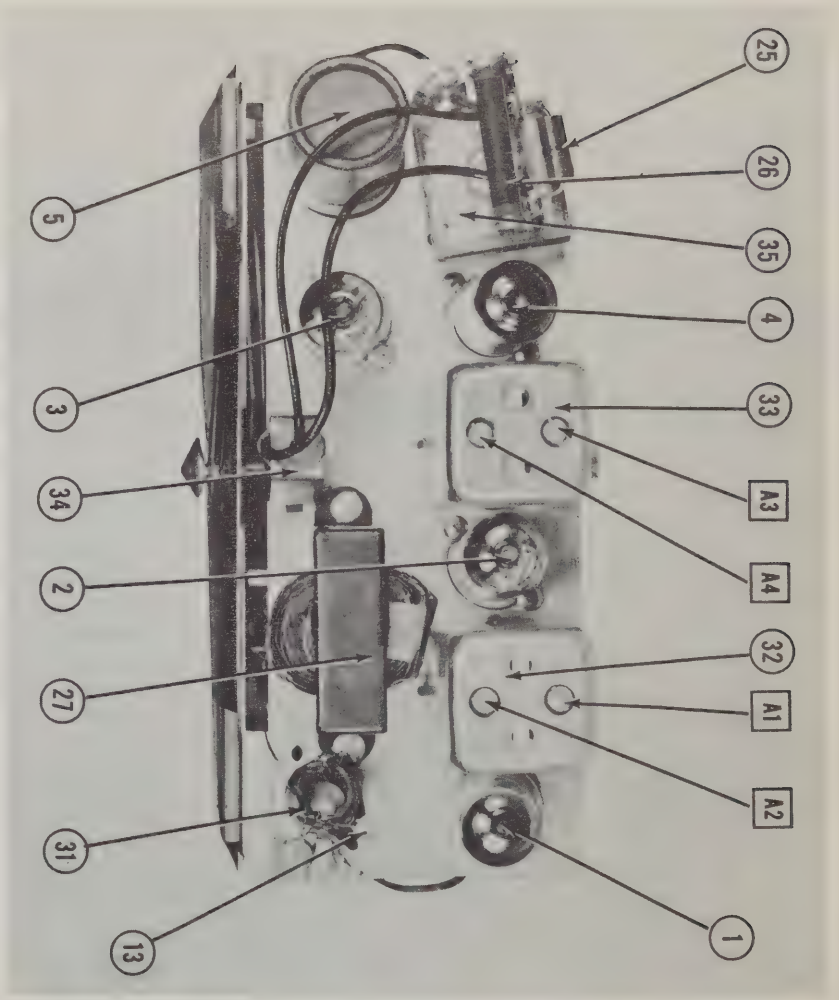
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESIST-ANCE	WATTS	JEWEL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
15A	500KΩ	1		MR48	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 15A per instructions
C	Switch			M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	JEWEL PART No.	IRC PART No.	
16	20KΩ	½		BTS-22K	Red-Blk.-Or. Oscillator Grid
17	100Ω	½		BW-½-100	Br.-Blk.-Br. IF Cathode
18	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
19	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
20	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
21	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
22	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
23	2200Ω	2		BT-2-2200	Red-Red-Red Filter
24	47Ω	1		BW-1-47	Yl.-Vi.-Blk. Surge Limiter
25	22Ω	1		BW-1-22	Red-Red-Blk. Pilot Light Shunt
26	1100Ω				Line Dropping-See Note

Note-This is a compensating resistor, approximately 1100Ω cold and 200Ω hot.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		JEWEL PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
27	2000Ω	3Ω	180Ω	.8Ω		A-3876	T22S45		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			JEWEL PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-113		
28	PM	3.0Ω		Mod. P4-X		
	CONE DIA.	VC DIA.				
29	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	JEWEL PART No.	MEISSNER PART No.	
30	Ant. Coil		6Ω			
31	Osc. Coil		4Ω		14-1040	
32	Input IF	22Ω	22Ω		16-6667	
33	Output IF	22Ω	22Ω		16-6668	

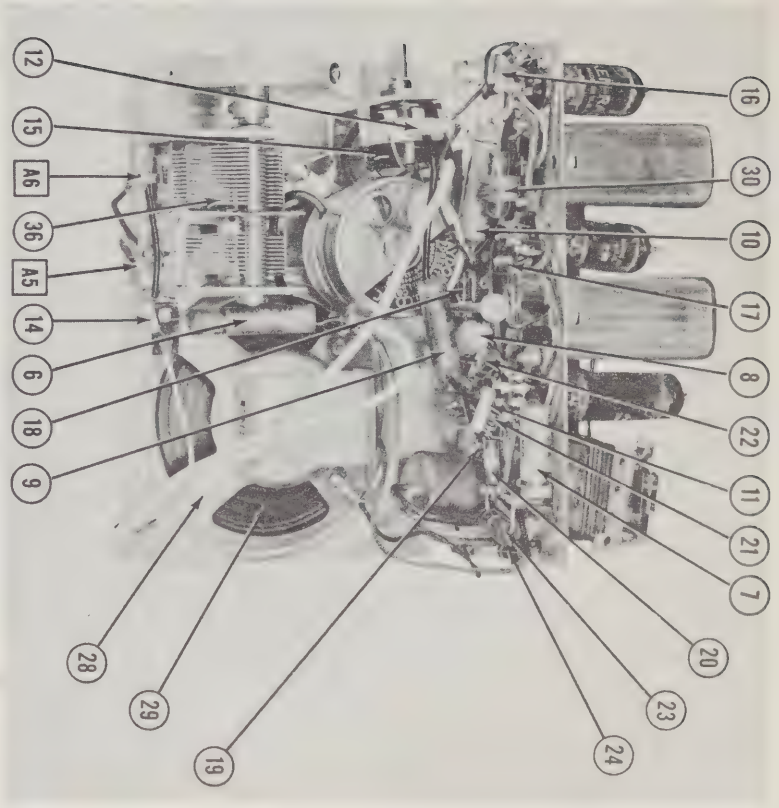
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					JEWEL PART No.		
34	Bayonet	6-8	0.25	Blue			Type 44

MISCELLANEOUS

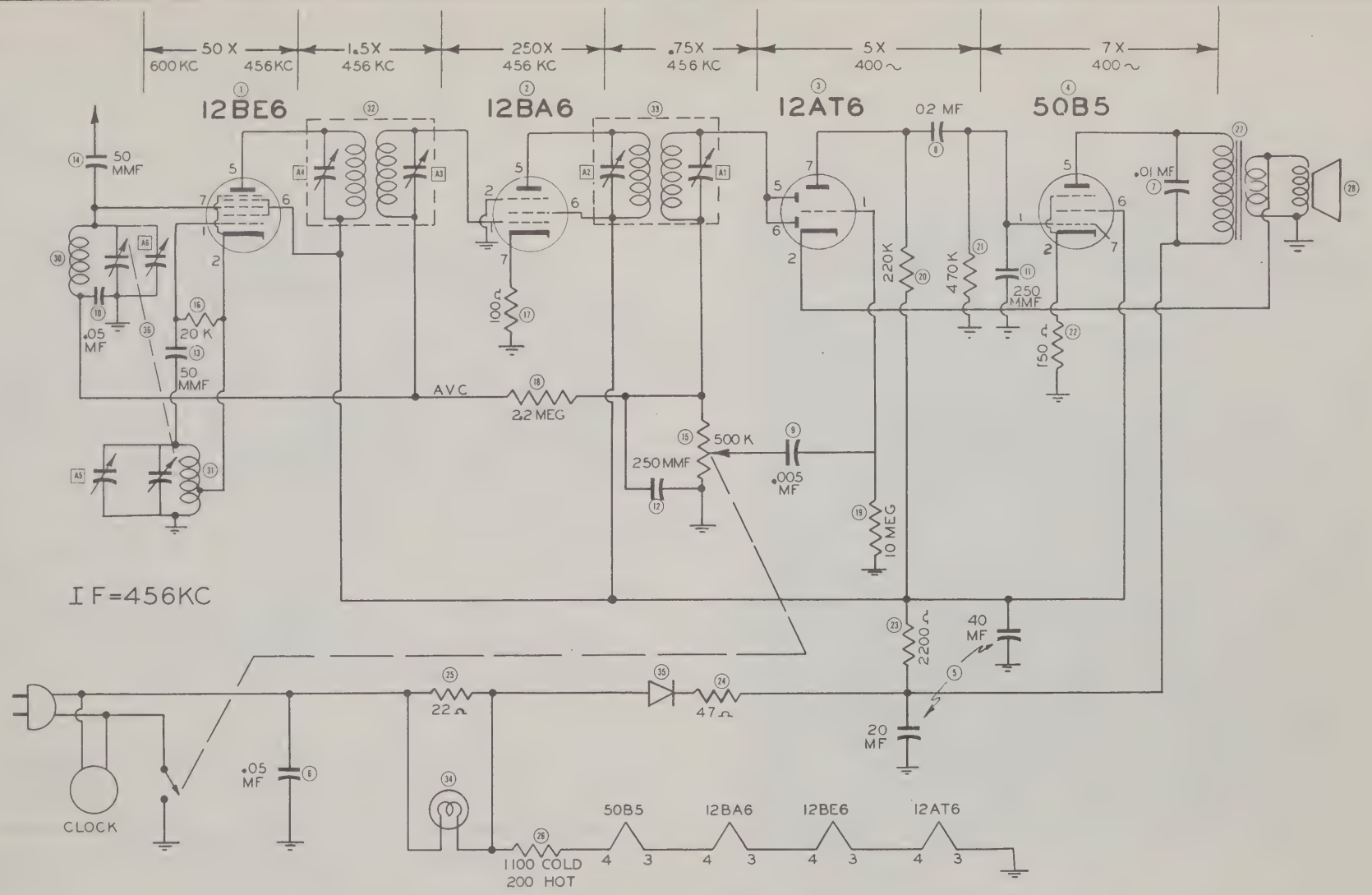
ITEM No.	PART NAME	JEWEL PART No.	NOTES
35	Rectifier		Selenium
36	2 Gang Var. Cap		13-462 MMF, 29-195 MMF

CHASSIS—BOTTOM VIEW



JEWEL MODEL 505 "PIN UP"

JEWEL MODEL 505 "PIN UP"



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-3.7VDC	0V.	13VAC	24VAC	87VDC	87VDC	0V.
2	12BA6	0V.	0V.	24VAC	36VAC	87VDC	87VDC	12VDC
3	12AT6	4VDC	0V.	0V.	13VAC	4VDC	12VDC	48VDC
4	50B5	0V.	50VDC	36VAC	87VAC	250VDC	87VDC	0V.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	210Ω	.5Ω	14Ω	25Ω	30KΩ	30KΩ	2.5MEGΩ
2	12BA6	2.5MEGΩ	0Ω	25Ω	32Ω	30KΩ	30KΩ	98Ω
3	12AT6	10MEGΩ	0Ω	0Ω	14Ω	400KΩ	400KΩ	260KΩ
4	50B5	420KΩ	125Ω	32Ω	75Ω	30KΩ	30KΩ	420KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

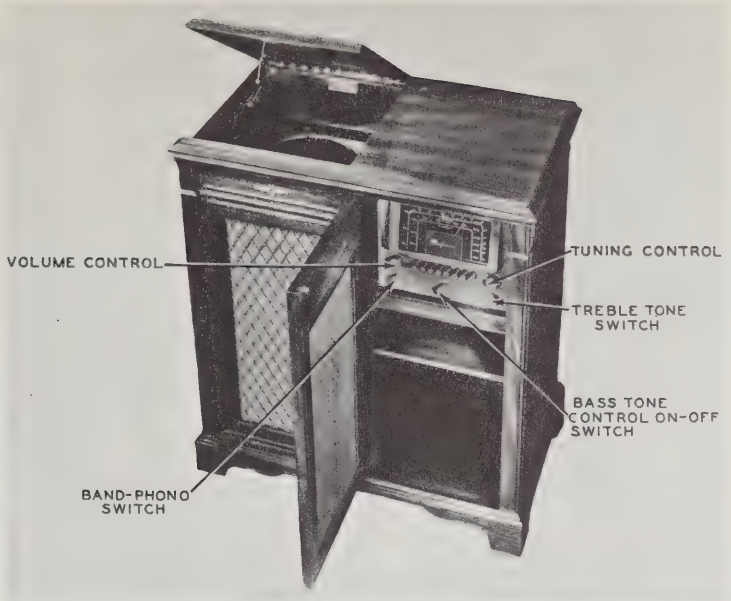
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

478-21

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MAGNAVOX
CHASSIS MODEL CR-188



MAGNAVOX MODEL 155B REGENCY SYMPHONY

TRADE NAME Magnavox, Chassis Model CR-188 (Model 155B Regency Symphony & Belvedere), Chassis Model Amp-101A (Amplifier Chassis)
MANUFACTURER The Magnavox Co., 2131 Bueter Road, Fort Wayne, Ind.
TYPE SET AC Operated Phono-Radio Combination Superheterodyne with Loop Antenna
TUBES (THIRTEEN) Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6J5 Det.-AVC, 6U5 Tuning Eye, 6J5 1st AF Amp., 6J5 2nd AF Amp., (4) 6V6GT Power Output, (2) 5Y3GT Rectifier.
POWER SUPPLY 110-120 Volts AC **RATING** 1.67 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST 530-1610-KC **SHORT WAVE** 4.9-18.1MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Treble control should be on sharp tune position for all adjustments except Step 7 when it is on full range. To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial. Volume should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	250 MMFD	High side to Pin 5. (osc. grid) of 6SA7. Low side to chassis.	455KC	BC	Tuning cap. closed.	Across voice coil	A1,A2, A3,A4.	Treble control should be on "sharp tune" position. Adjust for maximum output.
2	250 MMFD	High side to ant. term. Low side to chassis.	600KC	"	600KC	"	A5	Ant. switch must be in "ant. position". Rock tuning cap. and adjust for maximum output.
3	250 MMFD	"	1400KC	"	1400KC	"	A6	Adjust for maximum output
4	250 MMFD	"	"	"	Tune for maximum output.	"	A7, A8	Adjust for maximum output Repeat last three steps until no further increase in output is obtained.
5	400Ω	"	15MC	SW	15MC	"	A9	Tighten trimmer firmly, loosen until first peak is obtained. Adjust for maximum output.
6	400Ω	"	"	"	Tune for maximum output.	"	A10, A11	Rock tuning cap and adjust for maximum output.
7		High side to phono jack. Low side to chassis.	10000CPS. (Audio)	Phono	"	"	A12	Set treble control to "full range." Adjust for minimum output.
8		Loop	1400KC	BC	Tune for maximum output.	"	A13	Install receiver in cabinet. Set ant. switch to loop position. Treble control to "snarp tune." Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

MAGNAVOX
CHASSIS MODEL CR-188 PAGE 1

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.		6SK7	8N	
2	Converter		6SA7	8R	
3	IF Amp.		6SK7	8N	
4	Det.-AVC		6J5	6Q	
5	Tuning Eye		6U5	6R	
6	1st AF Amp.		6J5	6Q	
7	2nd AF Amp.		6J5	6Q	
8	Power Output		6V6GT	7AC	
9	Power Output		6V6GT	7AC	
10	Power Output		6V6GT	7AC	
11	Power Output		6V6GT	7AC	
12	Rectifier		5Y3GT	5T	
13	Rectifier		5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
14A	30	450	27002G2	AF6J	UP6CJ47†	FP390†	DY-2x20-450	EL-344†	■ Filter
B	10	450		PRS450-10					▲ "
15A	30	450	27002G2	AF6J	UP6CJ47†	FP390†	DY-2x20-450	EL-344†	■ "
B	10	450		PRS450-10					▲Cath. Bypass
16A	10	450	27002G6	AF22J4A‡	UP6CJ4‡	FP332‡	DY-10-450/25-50	EL-202‡	■ Filter
B	20	25							▲Cath. Bypass
17A	10	450	27002G6	AF22J4A‡	UP6CJ4‡	FP332‡	DY-10-450/25-50	EL-202‡	■ Filter
B	20	25							▲ Cath. Bypass
18	.02	600	25012963	684-02	DT4S2	TP412	S-6-02	TC-12	Line Filter
19	.02	600	25012963	684-02	DT6S2	TP412	S-6-02	TC-12	" "
20	.02	600	25012963	684-02	DT6S2	TP412	S-6-02	TC-12	Phono Motor Switch Bypas
21	.01	600	25012962	684-01	DT6S1	TP410	S-6-01	TC-11	Tone Compensation
22	.01	600	25012962	684-01	DT6S1	TP410	S-6-01	TC-11	" "
23	.03	400		484-03	DT4S3	TP424	S-4-03	TC-13	" " *
24	.012	200	250129G13	484-01	DT4S1	TP421	S-4-01	TC-11	Tone Compensation
25	.008	400	250129G11			TP450			" "
26	.004	400	250129G7	484-004	DT6D4	TP407	S-6-004	TC-24	" "
27	.05	200	25012965	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
28	.1	400	250129G22	484-.1	DT4P1	TP428	S-4-1	TC-1	Audio Coupling
29	.005	400	250129G10	484-005	DT6D5	TP408	S-6-005	TC-25	Tone Compensation
30	.02	600		684-02	DT4S2	TP412	S-6-02	TC-12	Audio Coupling
31	.01	200	25012969	484-01	DT4S1	TP421	S-4-01	TC-11	" "
32	.05	200	25012965	484-05	DT4S5	TP426	S-4-05	TC-15	IF Cath. Bypass
33	.05	200	25012965	484-05	DT4S5	TP426	S-4-05	TC-15	Osc. Feedback
34	.05	200	25012965	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
35	.25	400	250129G21	484-.25	DT4P25	TP430	S-4-25	TC-2	RF Bypass Pwr. Supp.
36	.25	400	250129G21	484-.25	DT4P25	TP430	S-4-25	TC-2	Screen Bypass
37	.05	200	25012965	484-05	DT4S5	TP426	S-4-05	TC-15	RF Cath. Bypass
38	.05	200	25012965	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
39	.01	400	25012969	484-01	DT4S1	TP421	S-4-01	TC-11	Ext. Ant. Coupling
40	15	500	250107G93					MS415	Output Grid Filter
41	15	500	250107G93					MS415	" " "
42	510	500	250159G64	1468-0005	5W5T5	MC245	MO.5-35	1FM-35	Tone Compensation
43	220	500	250159G100	1468-0002	5W5T2	MC237	MO.5-322	1FM-32	" "
44	220	500	250159G100	1468-0002	5W5T2	MC237	MO.5-322	1FM-32	Diode Filter
45	100	500	250159G98	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Diode Filter*
46	330	500		1468-0003	5W5T3	MC241	MO.5-333	1FM-33	Phono Coupling
47	50	500	250088G25	1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	Osc. Grid Capacitor
48	4700	300	25016165						RF Coupling
49	490	500	250085G32						Fixed Padder
50	4700	500	25016165						RF Coupling
51	330	500		1468-0003	5W5T3	MC241	MO.5-333	1FM-33	Tone Compensation *
113	330	500		1468-0003	5W5T3	MC241	MO.5-333	1FM-33	" " *

*Not used in all models.
†Parallel sections for desired capacity.
‡Do not use one section.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING: RESIST-ANCE	RATING: WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
52A	1 Meg.	1	220044G15	MR53	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 52A per instructions
53A	1 Meg.	1	220045G2	MR53	D13-137	M-63-Z	Bass Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 53A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	IRC PART No.	IDENTIFICATION CODES
54	1 Meg.	½	230084G31	BTS-1 Meg.	Br.-Blk.-Grn. RF Grid
55	100KΩ	½	230084G25	BTS-100K	Br.-Blk.-Yl. AVC Network
56	100KΩ	½	230084G25	BTS-100K	Br.-Blk.-Yl. AVC Network
57	4700Ω	½	230084G17	BTS-4700	Yl.-Vi.-Red RF Cathode
58	150Ω	½	23008468	BW-½-150	Br.-Grn.-Br. RF Cathode
59	1 Meg.	½	230084G31	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
60	470KΩ	½	230084G29	BTS-470K	Yl.-Vi.-Yl. Tone Compensation
61	100Ω	½	230084G7	BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
62	33KΩ	½	230084G22	BTS-33K	Or.-Or.-Or. Oscillator Grid
63	150Ω	½	230084G8	BW-½-150	Br.-Grn.-Br. Converter Cathode
64	820Ω	½	230084G61	BTS-820	Gray-Red-Br. IF Cathode
65	470KΩ	½	230084G29	BTS-470K	Yl.-Vi.-Yl. Series Phono-See Note 1
66	1 Meg.	½	230084G31	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
67	1.5 Meg.	½	230084G32	BTS-1.5 Meg.	Br.-Grn.-Grn. AVC Network
68	22KΩ	½	230084G21	BTS-22K	Red-Red-Or. Diode RF Filter
69	220KΩ	½	230084G27	BTS-220K	Red-Red-Yl. Diode Load
70	560KΩ	½	230084G95	BTS-560K	Grn.-Blue-Yl. Tuning Eye Plate Load
71	100KΩ	½	230084G25	BTS-100K	Br.-Blk.-Yl. Tuning Eye Dropping
72	2200Ω	½	230084G15	BTS-2200	Red-Red-Red 1st AF Cathode
73	100KΩ	1	230085G25	BTA-100K	Br.-Blk.-Yl. 1st AF Plate Load
74	220KΩ	½	230084G27	BTS-220K	Red-Red-Yl. 1st AF Plate Decoupling
75	100KΩ	½	230084G25	BTS-100K	Bl.-Blk.-Yl. Tone Compensation
76	47KΩ	½	230084G23	BTS-47K	Yl.-Vi.-Or. 2nd AF Grid
77	470Ω	½	230084G11	BTS-470	Yl.-Vi.-Br. 2nd AF Cathode
78	15KΩ	1	230085G20	BTA-15K	Br.-Grn.-Or. 2nd AF Plate Load
79	10KΩ	1	230085G19	BTA-10K	Br.-Blk.-Or. 2nd AF Plate Decoupling
80	1 Meg.	½	230084G31	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
81	220KΩ	½	230084G27	BTS-220K	Red-Red-Yl. 1st AF Grid-See Note 1
82	10KΩ	½	230084G19	BTS-10K	Br.-Blk.-Or. Output Grid
83	10KΩ	½	230084G19	BTS-10K	Br.-Blk.-Or. Output Grid
84	100KΩ	1	230085G25	BTA-100K	Br.-Blk.-Yl. Tone Compensation
85	100KΩ	1	230085G25	BTA-100K	Br.-Blk.-Yl. Tone Compensation
86	39KΩ	½	230084G81	BTS-39K	Or.-White-Or. Driver Transformer Shunt
87	3900Ω	½		BTS-3900	Or.-White-Red Tone Compensation
88	15KΩ	2	230086G20	BT-2-15K	Br.-Grn.-Or. Bleeder
89A	1000Ω		240037G1	AB-1000	Voltage Dropping
B	8000Ω			AB-8000	" "
C	125Ω			ABA-150	Output Cathode-See Note 2
114	10KΩ	½	230084G19	BTS-10K	Br.-Blk.-Or. BC RF Coil Shunt

Note 1-Not used in all models.
Note 2-On IRC replacement set slider 125Ω from one end.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MAGNAVOX PART No.	STANCOR PART No.	THORDARSON PART No.	
90	117V AC @ 1.67A	760V CT @ .19A	5.0V AC @ 3.8A	6.3V AC @ 4.3A	C300025G1	P-6315	T22R07	

TRANSFORMER (INPUT)

ITEM NO.	RATING: RESISTANCE PRI.	RESISTANCE SEC.1	RESISTANCE SEC.2	TURNS RATIO PRI. to EITHER SEC.	REPLACEMENT DATA: MAGNAVOX PART NO.	STANCOR PART NO.	THORDARSON PART NO.	INSTALLATION NOTES
91	2200Ω	3000Ω	2300Ω	.95 to 1	320017G1		T20A25#	#Drill new mounting holes.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MAGNAVOX PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
92	3800Ω CT	1.7Ω 2.5Ω	190Ω CT	.15Ω .25Ω	330024G1		T22S60#		#Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MAGNAVOX PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.				
93	250Ω	5.0Ω	582869			
	CONE DIA.	VC DIA.				
94	11½"	3/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			
	FIELD RES.	VC IMP.				
95	270Ω	5.3Ω	582815			
	CONE DIA.	VC DIA.				
96	11½"	3/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MAGNAVOX PART No.	MEISSNER PART No.	
97	Loop Ant.		1.3Ω	180511G14		
98	SW Cabinet Ant.			360254G1		99A & 99B in same can.
99A	BC Ant. Coil	15.5Ω§	3.5Ω			
B	SW Ant.Coil		.1Ω			
100A	BC RF Coil	16Ω	3.5Ω	360254G2		100A & 100B in same can.
B	SW RF Coil	.5Ω	1Ω			
101A	BC Osc. Coil	.1Ω	4.5Ω	360253G1		101A & 101B in same can.
B	SW Osc. Coil	0Ω	.1Ω			
102	10KC Filter Coil		210Ω	360244G1		
103	Input IF	7Ω	6.5Ω .6Ω↓	360266G1		↓Band Expander Winding
104	Output IF	7.5Ω	7.5Ω	360267G1	16-6645	

§Includes both primaries.

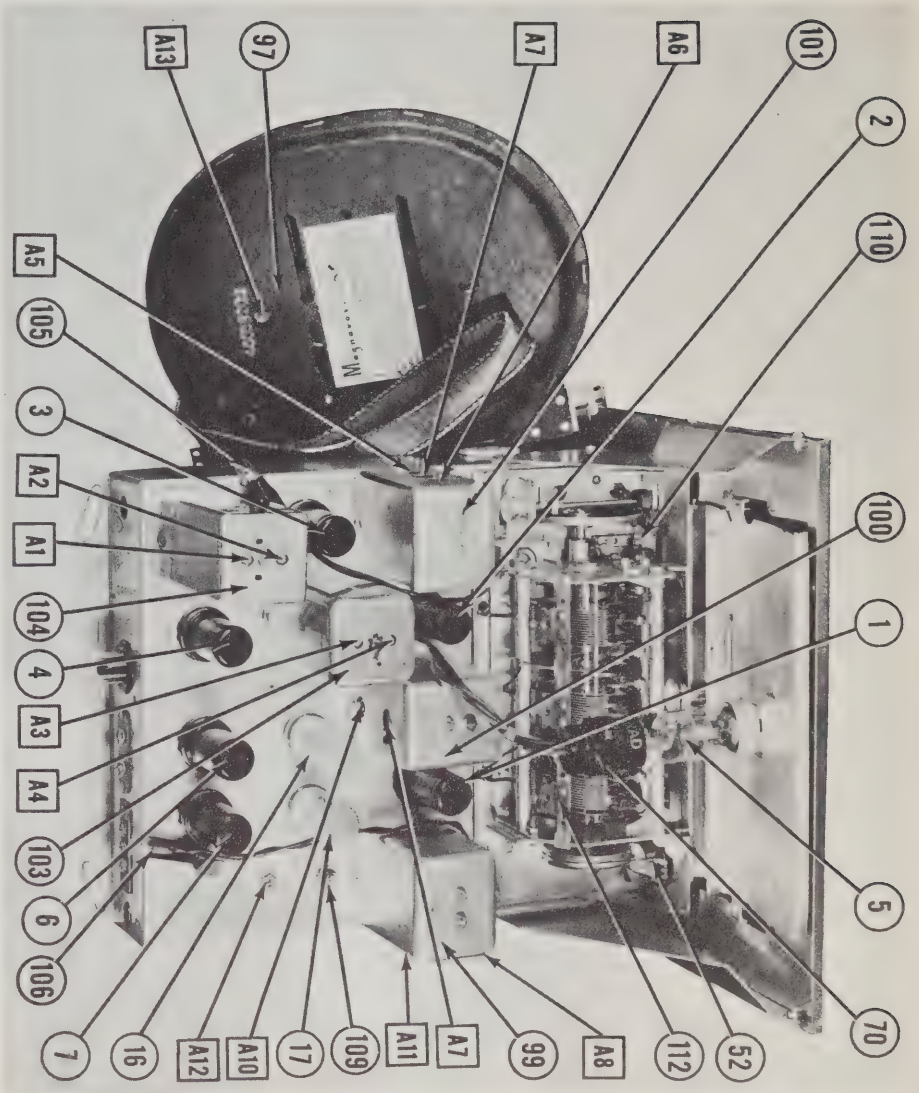
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MAGNAVOX PART No.		
105	Bayonet	6.3V	0.25A	Blue			Type 44
106	"	"	"	"			"

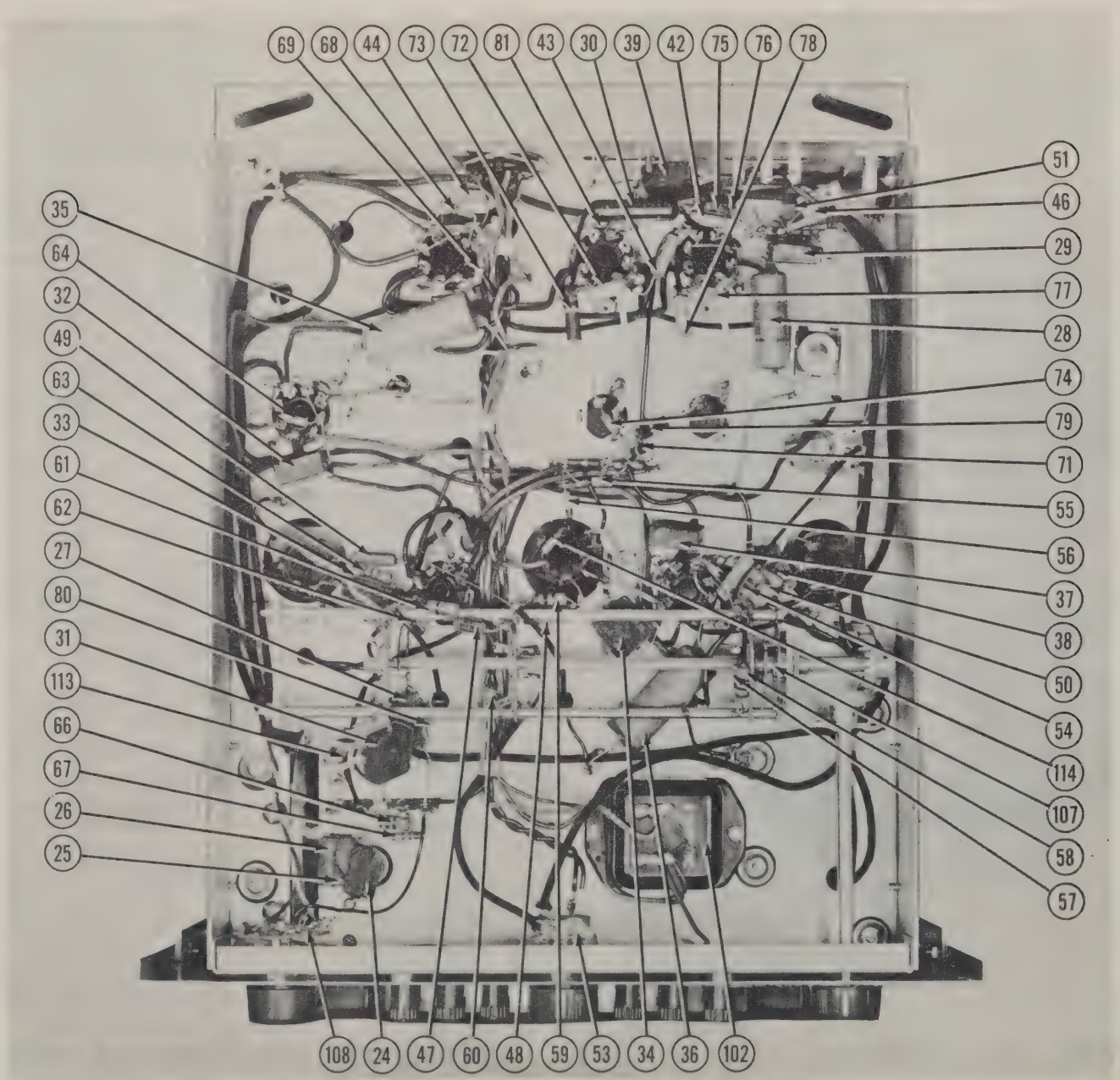
MISCELLANEOUS

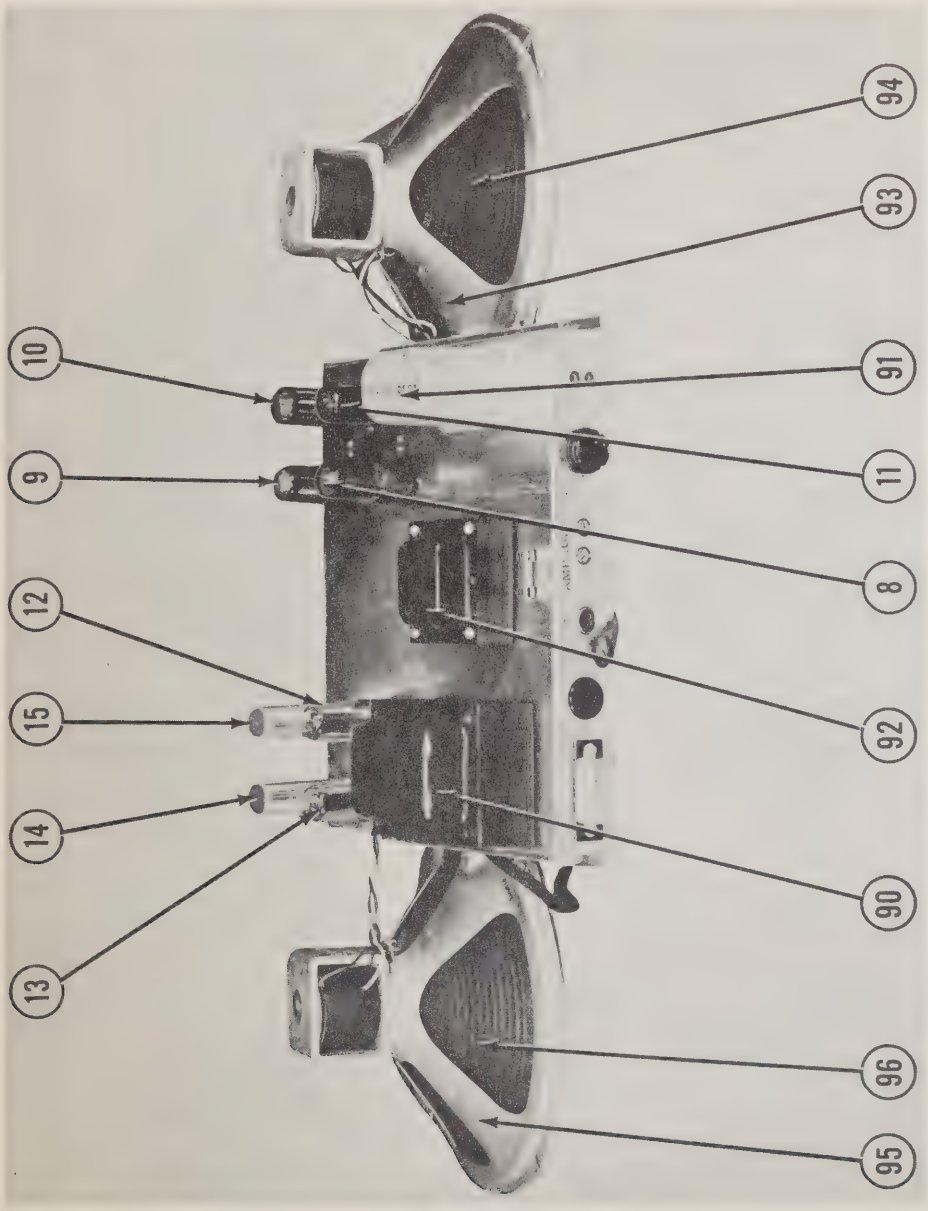
ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
107	Switch	160160G1	Band-Phono
108	"	160161G1	Treble Tone
109	"	160157G1	Antenna
110	"	160158G2	Muting
111	Fuse		3A-250V
112	3 Gang Var.Cap.	260054G1	16-558 MMF (each section)
A12	Trimmer	259610G1	10KC Audio Filter
	Dial Glass	150285	

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW

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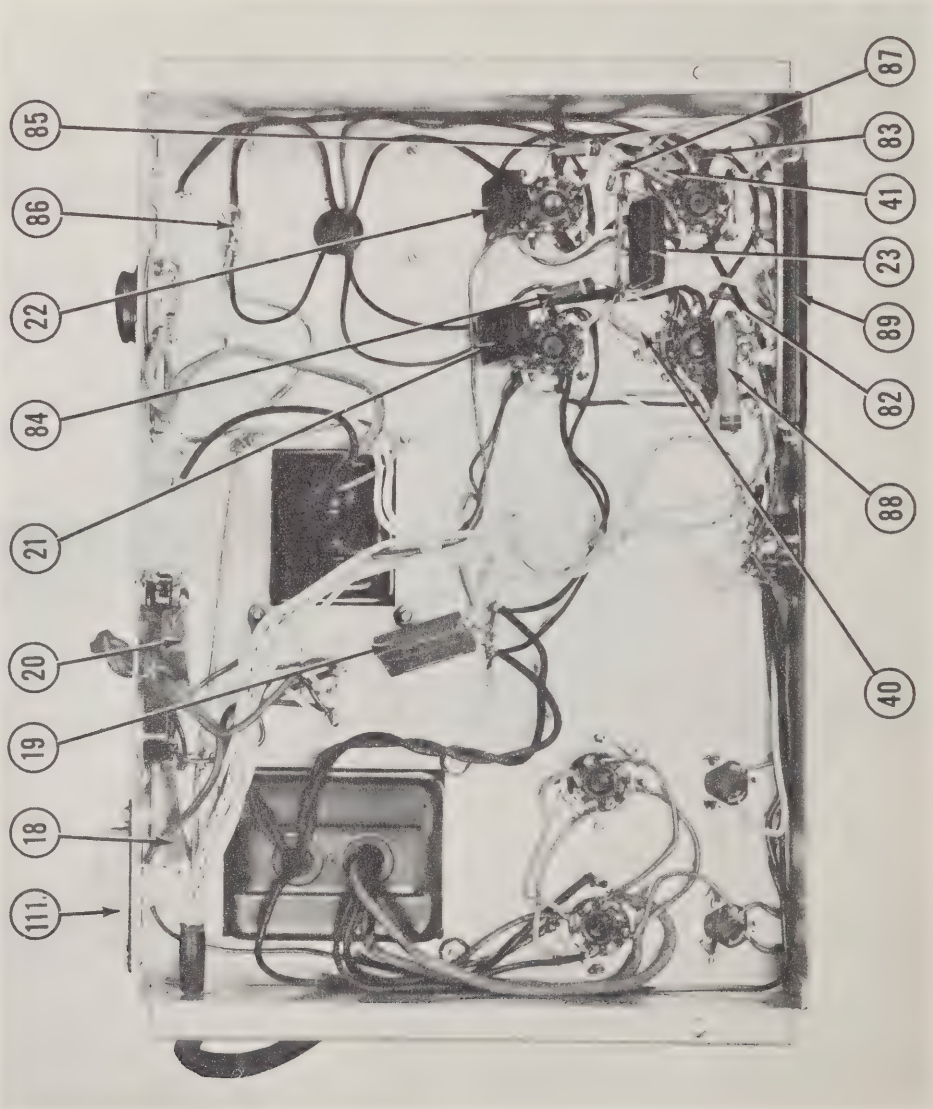
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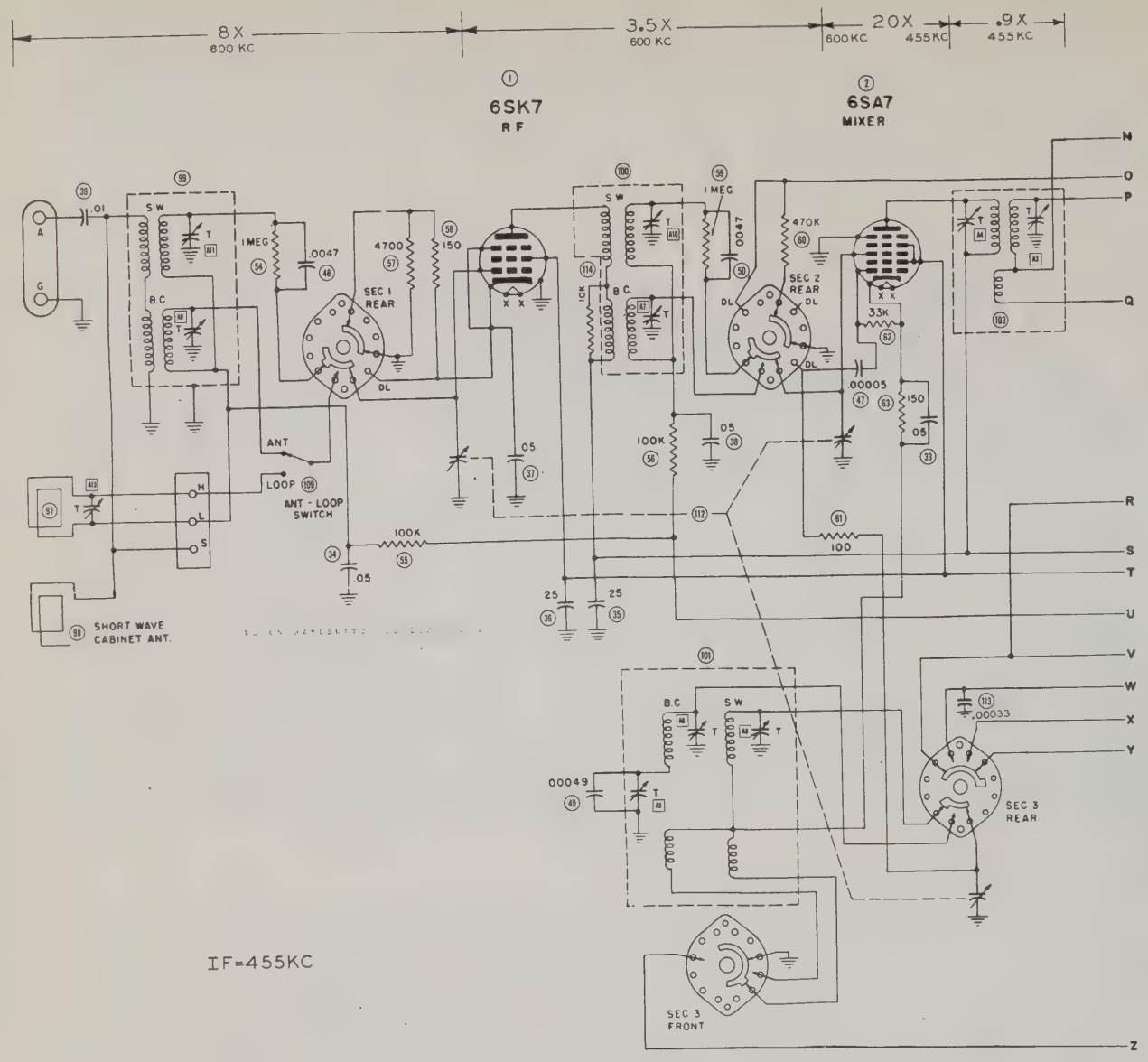


IF=455KC

VOLTAGE AND RESISTANCE TAKEN IN BROADCAST POSITION
TONE CONTROL SET AT FULL RANGE
BASS CONTROL "ON"

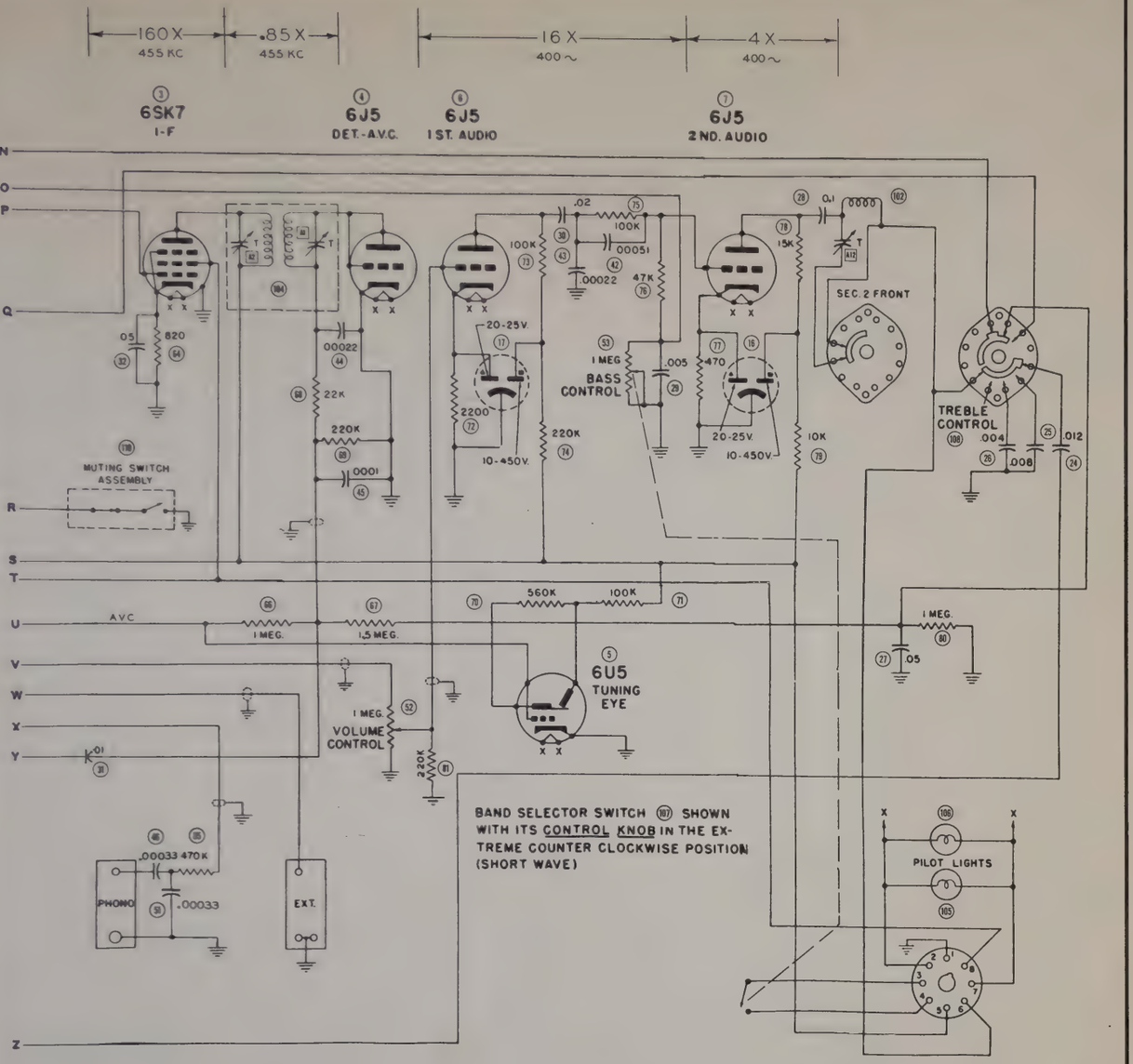
VOLTAGE READINGS

ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	6SK7	0V.	3.1V.AC	111V.DC	-2V.DC	111V.DC	118V.AC	3.1V.AC	290V.DC
2	6SA7	0V.	3.1V.AC	290V.DC	118V.DC	-2V.DC	0V.	3.1V.AC	0V.
3	6SK7	0V.	3.1V.AC	5.9V.DC	0V.	5.9V.DC	118V.DC	3.1V.AC	290V.DC
4	6J5	0V.	3.1V.AC	-55V.DC	-55V.DC	-55V.DC	-55V.DC	3.1V.AC	0V.
5	6J5	0V.	3.1V.AC	40V.DC	0V.	0V.	0V.	3.1V.AC	1.6V.DC
7	6J5	0V.	3.1V.AC	133V.DC	0V.	0V.	133V.DC	3.1V.AC	3.3V.DC
8	6V6GT	0V.	3.1V.AC	308V.DC	320V.DC	0V.	0V.	3.1V.AC	18V.DC
9	6V6GT	0V.	3.1V.AC	308V.DC	320V.DC	0V.	0V.	3.1V.AC	18V.DC
10	6V6GT	0V.	3.1V.AC	308V.DC	320V.DC	0V.	0V.	3.1V.AC	18V.DC
11	6V6GT	0V.	3.1V.AC	308V.DC	320V.DC	0V.	0V.	3.1V.AC	18V.DC
12	5Y3GT/G	0V.	420V.DC	0V.	380V.AC	0V.	380V.AC	0V.	420V.DC
13	5Y3GT/G	0V.	420V.DC	0V.	380V.AC	0V.	380V.AC	0V.	420V.DC

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

478-22

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



VOLTAGE AND RESISTANCE TAKEN IN BROADCAST POSITION

TONE CONTROL SET AT FULL RANGE

BASS CONTROL "ON"

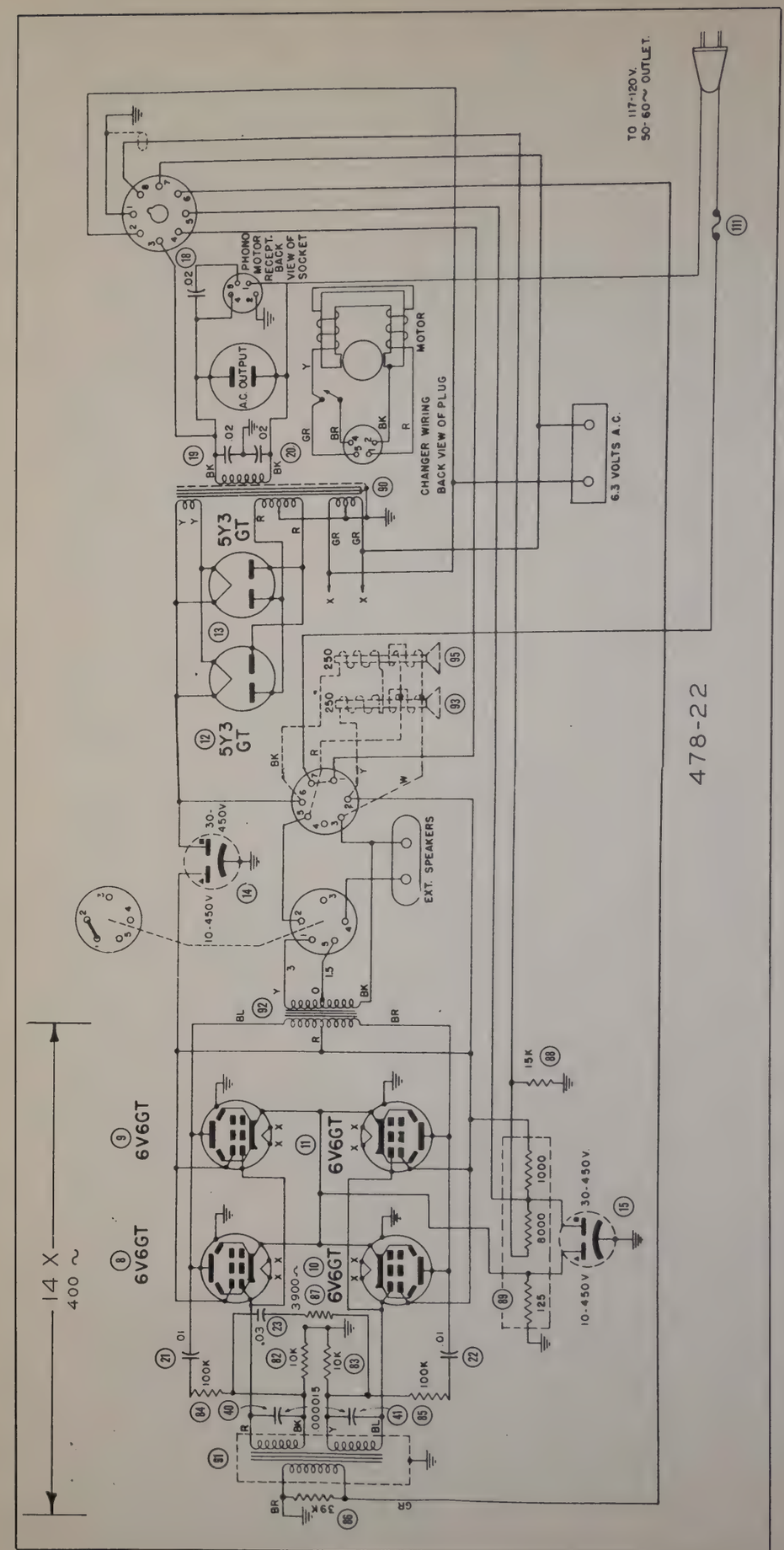
RESISTANCE READINGS

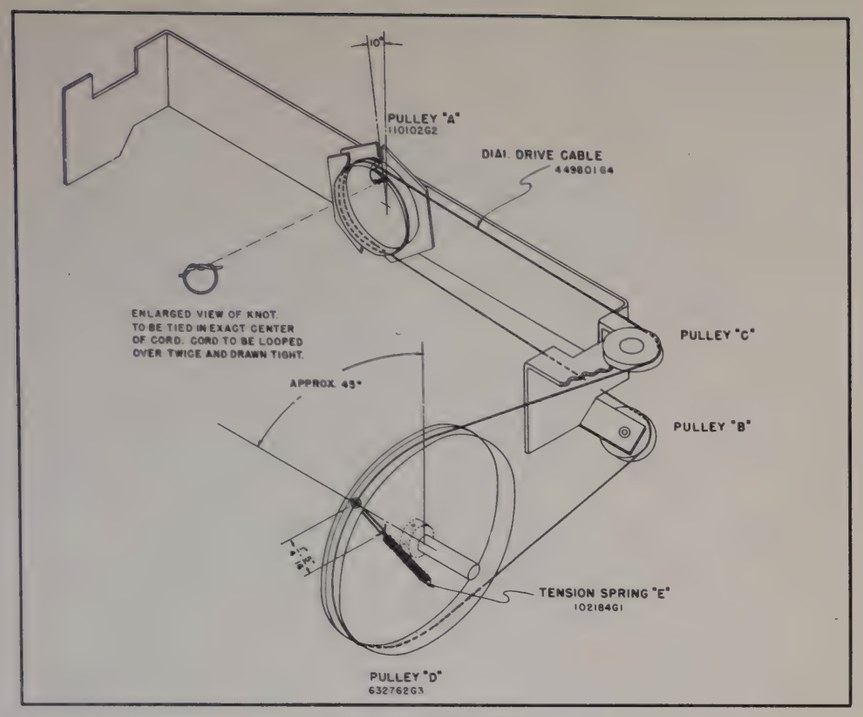
ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	6SK7	0Ω	.1Ω	5KΩ	1.3MEG.	5KΩ	10KΩ	.1Ω	20KΩ
2	6SA7	0Ω	.1Ω	20KΩ	10KΩ	32KΩ	120Ω	.1Ω	1.2MEG.
3	6SK7	0Ω	.1Ω	750Ω	580KΩ	750Ω	10KΩ	.1Ω	20KΩ
4	6J5	0Ω	.1Ω	210KΩ	210KΩ	210KΩ	210KΩ	.1Ω	0V.
6	6J5	0Ω	.1Ω	300KΩ	INF.	170KΩ	INF.	.1Ω	2KΩ
7	6J5	0Ω	.1Ω	40KΩ	1MEG.	1MEG.	40KΩ	.1Ω	450Ω
8	6V6GT	0Ω	.1Ω	20KΩ	20KΩ	10KΩ	110KΩ	.1Ω	102Ω
9	6V6GT	0Ω	.1Ω	20KΩ	20KΩ	10KΩ	110KΩ	.1Ω	102Ω
10	6V6GT	0Ω	.1Ω	20KΩ	20KΩ	10KΩ	10KΩ	.1Ω	102Ω
11	6V6GT	0Ω	.1Ω	20KΩ	20KΩ	10KΩ	110KΩ	.1Ω	102Ω
12	5Y3GT/G	INF.	20KΩ	INF.	32Ω	INF.	36Ω	INF.	20KΩ
13	5Y3GT/G	INF.	20KΩ	INF.	32Ω	INF.	36Ω	INF.	20KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

478-22

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.





DIAL CORD REPLACEMENT

Rotate the brass pulley designated "A" in figure above until the dial pointer strikes the stop at the high frequency end of the dial calibration. In this condition the slot in pulley "A" should be approximately ten degrees to the left of being vertical-see figure above. If the slot in the pulley is in some other position under the above mentioned conditions, the pointer set screw is probably loose and has allowed the pointer to slip.

To correct this condition, first remove the glass dial and loosen the pointer screw. Then while holding pulley "A" so that its slot is approximately ten degrees to the left of vertical (when viewed from the rear) adjust the pointer until it is resting against the stop at the high frequency end of its travel. Then tighten the pointer set screw securely and replace the glass dial.

Completely unmesh the condenser gang and check the location of the hole or slot in pulley "D". If this hole is not approximately 45 degrees back from vertical as shown on figure above, loosen the two No. 6 Allen set screws in the hub of pulley "D" and slip the pulley on its shaft (while holding the condenser gang unmeshed) until the specified adjustment is obtained; then tighten one of the set screws securely. It will be shown later that this is a temporary setting. Next, tie a double knot in the exact center of a 25-inch length of dial cable and fold the cable back on itself so that the knot is at one end. The correct method for tying this knot is shown as an inset on figure above. Grasp the cable near the knotted end and slide it into the pulley slot so that the knot is against the inside rim of the pulley as shown in the sketch. The piece of cable nearest the dial frame should be wound in the direction shown for one-half turn then over the lower pulley "B", around the bottom of the large pulley "D" and into the hole. Pull the cable taut and wrap the end around the small hook on pulley "D" temporarily.

The remaining piece of cable should be wound around pulley "A" in the direction shown, for one complete turn, over the upper pulley "C", and over the top of pulley "D". Thread the end through the small hole in pulley "D" and pull both ends of the cable taut. With one end of tension spring "E" fastened to the hook on pulley "D" lace the two free ends of the cable through the opposite end of the spring and tie a knot at a point that will allow 1/4" to 5/16" of cable between the spring and the inside rim of pulley "D". Be sure to tie the knot around one coil of the spring in the manner shown.

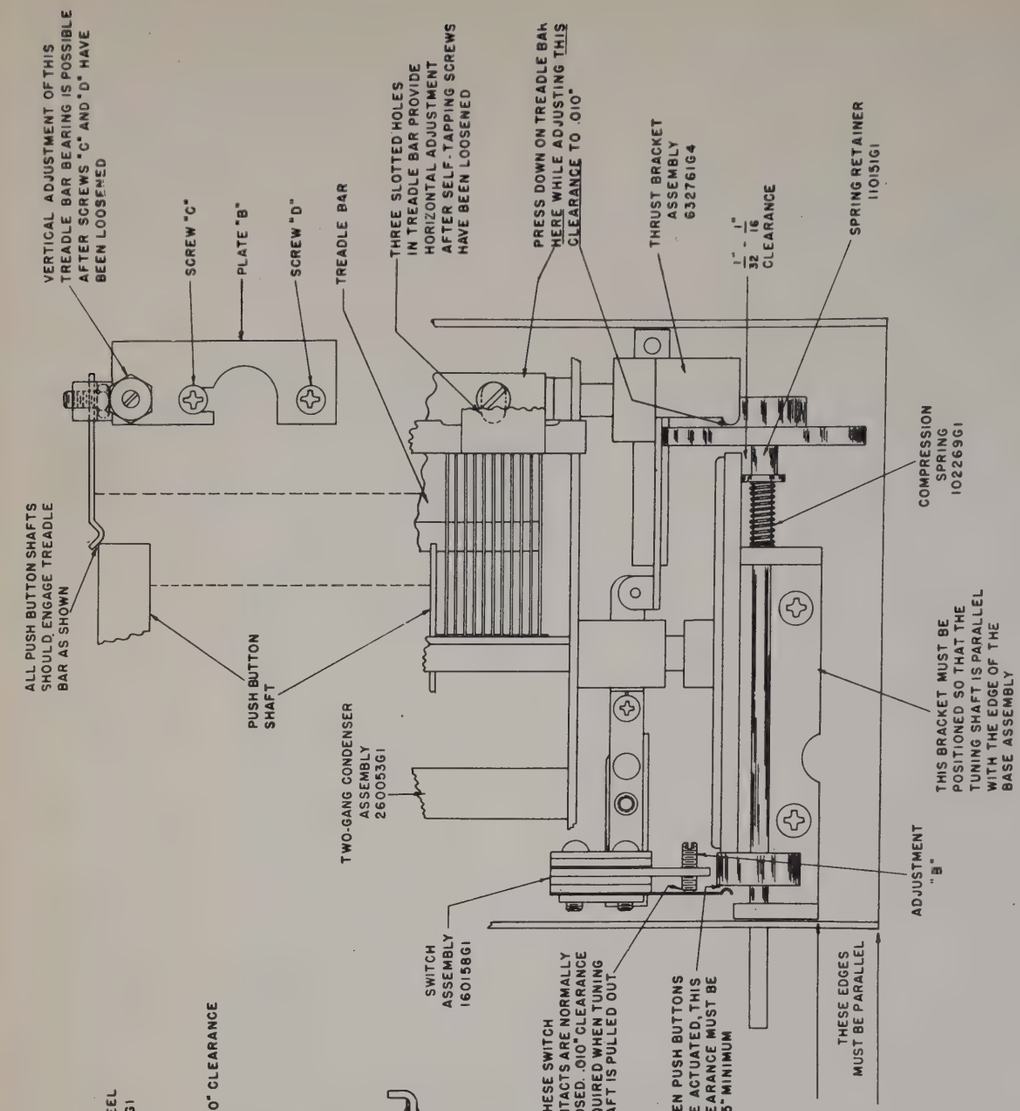
Now with the condenser gang completely meshed, check the position of the dial pointer. If it is not in line with the last calibration mark at the low frequency end of the dial, loosen the set screw in pully "D" and turn it until the pointer is in the specified position. Be sure that the condenser gang does not move during this adjustment. Then tighten the two screws in pulley "D" securely completing the operation.

DISASSEMBLY INSTRUCTIONS

1. Remove phono-motor plug from chassis.
2. Remove phono-pickup plug from chassis.
3. Remove speaker plug from chassis.
4. Remove amplifier plug from chassis.
5. Remove loop antenna leads from chassis.
6. Remove short wave lead from chassis.
7. Remove four wood screws holding loop antenna to cabinet. Remove loop.
8. Loosen three clamps holding amplifier cable to cabinet.
9. Remove five push-on type control knobs from front of cabinet.
10. Remove four Phillips head screws holding chassis to cabinet. Remove audio and power supply chassis.
11. Remove two Phillips head screws holding chassis to cabinet. Remove receiver chassis.
12. Remove four hex head nuts from each speaker. Remove speakers from cabinet.

PUSHBUTTON ADJUSTMENTS

1. Turn receiver on and allow it to warm up for about 15 minutes. Turn selectivity switch to sharp tune position. Loosen all buttons a few turns.
2. Make a list of desired stations ranging from high to low end of the band.
3. Manually tune in first station and push in manual tuning control so that the station can not be detuned.
4. Push first button on right in completely and tighten firmly.
5. To check accuracy of setting detune with manual tuning control. Then retune with push-button. If setting is off repeat last three steps.
6. To set up the remaining buttons follow the same procedure as outlined above setting up the buttons from right to left.


VERTICAL ADJUSTMENT OF THIS TREADLE BAR BEARING IS POSSIBLE AFTER SCREWS "C" AND "D" HAVE BEEN LOOSENED
SCREW "C"
PLATE "B"
SCREW "D"
TREADLE BAR
THREE SLOTTED HOLES IN TREADLE BAR PROVIDE HORIZONTAL ADJUSTMENT AFTER SELF-TAPPING SCREWS HAVE BEEN LOOSENED
PRESS DOWN ON TREADLE BAR HERE WHILE ADJUSTING THIS CLEARANCE TO .010"
THRUST BRACKET ASSEMBLY 63276IG4
1" - 1" / 32 - 16 CLEARANCE
SPRING RETAINER 110151G1
ALL PUSH BUTTON SHAFTS SHOULD ENGAGE TREADLE BAR AS SHOWN
PUSH BUTTON SHAFT
COMPRESSION SPRING 102269G1
TWO-GANG CONDENSER ASSEMBLY 260053G1
THIS BRACKET MUST BE POSITIONED SO THAT THE TUNING SHAFT IS PARALLEL WITH THE EDGE OF THE BASE ASSEMBLY
ADJUSTMENT "B"
SWITCH ASSEMBLY 160158G1
THESE SWITCH CONTACTS ARE NORMALLY CLOSED. .010" CLEARANCE REQUIRED WHEN TUNING SHAFT IS PULLED OUT
WHEN PUSH BUTTONS ARE ACTUATED, THIS CLEARANCE MUST BE .015" MINIMUM
THESE EDGES MUST BE PARALLEL
FLYWHEEL 110152G1
.010" CLEARANCE
DRIVE WHEEL 63275G4
3 5/64"
ADJUSTMENT "A"
DRIVE COLLAR 110153G2
3/4"
.025 CLEARANCE
TUNING SHAFT 110104G1

CONDENSER GANG DRIVER ADJUSTMENTS

Whenever any of the mechanical parts in the condenser gang drive assembly require replacement due to rough handling or for any other reason, it is extremely important that clearances and adjustments shown on Figures 1 and 2 are effected; otherwise the tuning mechanism will be sluggish or it may slip during operation.

In reassembling the mechanism after any part was replaced, follow the procedure outlined below:

1. Assembly the Tuning Shaft, Drive Collar, Compression Spring, Spring Retainer and Flywheel in the manner shown on Figure 2. Note that the Tuning Shaft must extend 3/4" from the front of the assembly and that the spacing between the rear of the Drive Collar and the front of the Flywheel must be 3-5/64". Any excess length in the Tuning Shaft may extend beyond the rear of the Flywheel. See Figure 1.
2. The distance between the rubber-tired Drive Wheel and the smaller diameter section of the Spring Retainer must be 1/32" to 1/16" (Figure 2). This adjustment is effected by loosening the two No. 6 Allen set screws in the Drive Wheel hub and sliding the wheel on its shaft until the required clearance is obtained. When the adjustment is completed, tighten the two screws in the hub of the Driver Wheel.
3. While pressing down on the Treadle Bar at the location shown on Figure 2, adjust the Thrust Bracket until the clearance between the rear of the Flywheel and the projection on the Thrust Bracket is .010" as shown on the diagram. To make this adjustment, loosen the two No. 6 Allen set screws in the hub of Thrust Bracket and rotate the bracket until the specified clearance is obtained when the pushbuttons are NOT actuated. Tighten the two screws securely when the adjustment is completed. Press each push button and check that the Drive Collar is pushed away from the rubber-tired Drive Wheel.
4. Next, adjust the clearance in the muting switch contacts by turning the Phillips-head screw designated Adjustment "A" on Figure 1, until the specified clearance of .025" is obtained (When the push buttons are NOT actuated) The screw designated Adjustment "B" until a minimum clearance of .015" is obtained between the front surface of the Drive Collar and the switch spring directly in front of it. This setting should also cause a minimum clearance of .010" between the switch contacts actuated by pressure of the front surface of the Drive Collar, when the Tuning Shaft is pulled out. The function of this switch is to open the muting circuit when setting up the push buttons. As its contacts are wired in series with the large muting switch (contacts are shorted by pressing any push button), pulling out on the Tuning Shaft causes the small switch contacts to open the muting circuit so that a station can be heard while the push button is held in and tightened.

On rare occasions it may be necessary to adjust the relation between the push button bars and the Treadle Bar. Such adjustment might be required if when pushing any of the push buttons, sufficient motion is not transmitted to the Treadle Bar to cause a disengagement between the Drive Collar and the Drive wheel.
This can usually be accomplished by loosening the two screws designated "C" and "D" on Figure 2, and moving plate "B" in the direction required to correct this condition.

MANTOLA
MODEL R-7543

MANTOLA
MODEL R-7543

MANTOLA MODEL R-7543

TRADE NAME	Mantola, Model R-7543
SUPPLIER	The B. F. Goodrich Co., 500 S. Main St., Akron, Ohio
TYPE SET	AC-DC Operated Superheterodyne Receiver - Self Contained Loop Antenna
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1720KC RATING .245 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer to last reference mark at low freq. end of dial. Use isolation transformer if available. If not, connect a capacitor in series with low side of signal generator and chassis. Volume should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	"

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

MANTOLA
MODEL R-7543

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MANTOLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MANTOLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	3-1	AF88D	UP4215	FP306†	DY-4020-150	EL-24	■ Filter
B	20	150							▲ "
7	.1	200		484-.1	DT4P1	TP428	S-4-1	TC-1	Line Filter
8	.02	400		484-02	DT4S2	TP423	S-4-02	TC-12	Output Plate Bypass
9	.01	400		484-01	DT4S1	TP421	S-4-01	TC-11	Audio Coupling
10	.01	400		484-01	DT4S1	TP421	S-4-01	TC-11	" "
11	.05	200		484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
12	250	500		1468-00025	5W5T25	MC240	M0.5-325	1FM-325	Audio Plate Bypass
13	100	500		1468-0001	5W5T1	MC235	M0.5-31	1FM-31	IF Bypass Vol. Cont.
14	100	500		1468-0001	5W5T1	MC235	M0.5-31	1FM-31	Osc. Grid Capacitor

†Do not use bypass section

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MANTOLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
15A	500KΩ	1	20-1	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 15A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

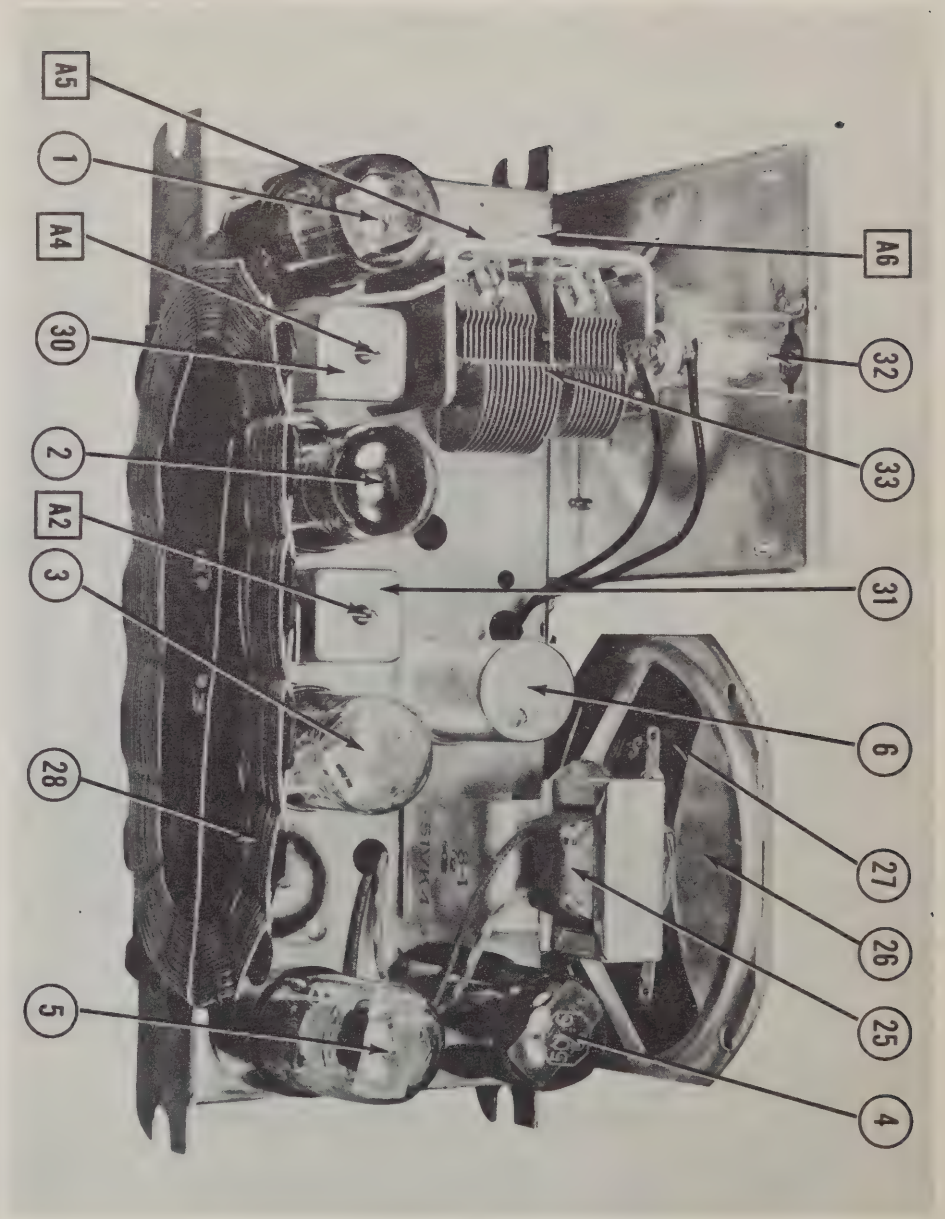
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MANTOLA PART No.	IRC PART No.	IDENTIFICATION CODES
16	20KΩ	¼		BTS-22K	Red-Blk.-Or. Oscillator Grid
17	10 Meg.	¼		BTS-10 Meg.	Br.-Blk.-Blue AVC Network
18	1 Meg.	¼		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network-See Note
19	6 Meg.	¼		BTS-5.6 Meg.	Blue-Blk.-Grn. AF Grid
20	500KΩ	¼		BTS-470K	Grn.-Blk.-Yl. AF Plate Load
21	500KΩ	¼		BTS-470K	Grn.-Blk.-Yl. Output Grid
22	150Ω	¼		BW-½-150	Br.-Grn.-Br. Output Cathode
23	2000Ω	1		BTA-2200	Red-Blk.-Red Filter
24	10Ω	¼		BW-½-10	Br.-Blk.-Blk. Line Dropping

Note-Some models use 2 Meg. in this application. IRC replacement BTS-2.2 Meg.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MANTOLA PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
25	2400Ω	3.2Ω	150Ω	.5Ω	Part of 8-1	A-3876*	T22845*		*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA MANTOLA PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-1051		‡Fabricate new mounting bracket.
26	PM	3.2Ω	8-1	Mod. P5-X		
	CONE DIA.	VC DIA.				
27	4-5/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

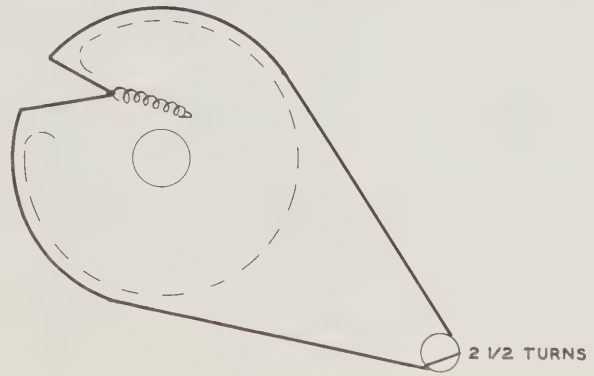
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MANTOLA PART No.	MEISSNER PART No.	
28	Loop Ant.		1.2Ω	32-5		
29	Osc. Coil	1Ω	6Ω	14-1	14-1040	
30	Input IF	10.5Ω	10Ω	15-3	16-6668	
31	Output IF	10.5Ω	10.5Ω	15.3	16-6669	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA MANTOLA PART No.		INSTALLATION NOTES
32	Bayonet	6-8	0.15	Brown			Type 47

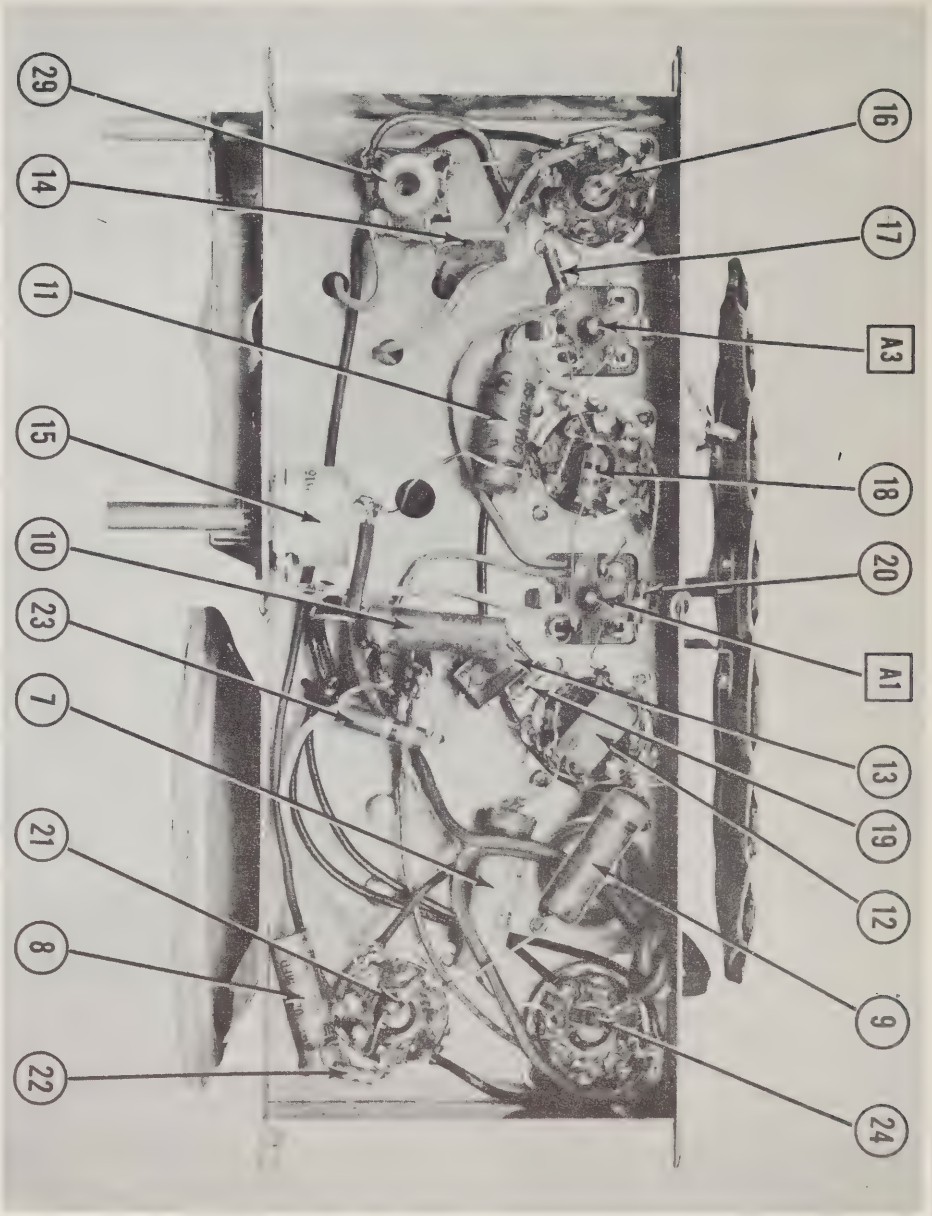
MISCELLANEOUS

ITEM No.	PART NAME	MANTOLA PART No.	NOTES
33	2 Gang Var. Cap	6-1	28-474 MMF, 32-195 MMF



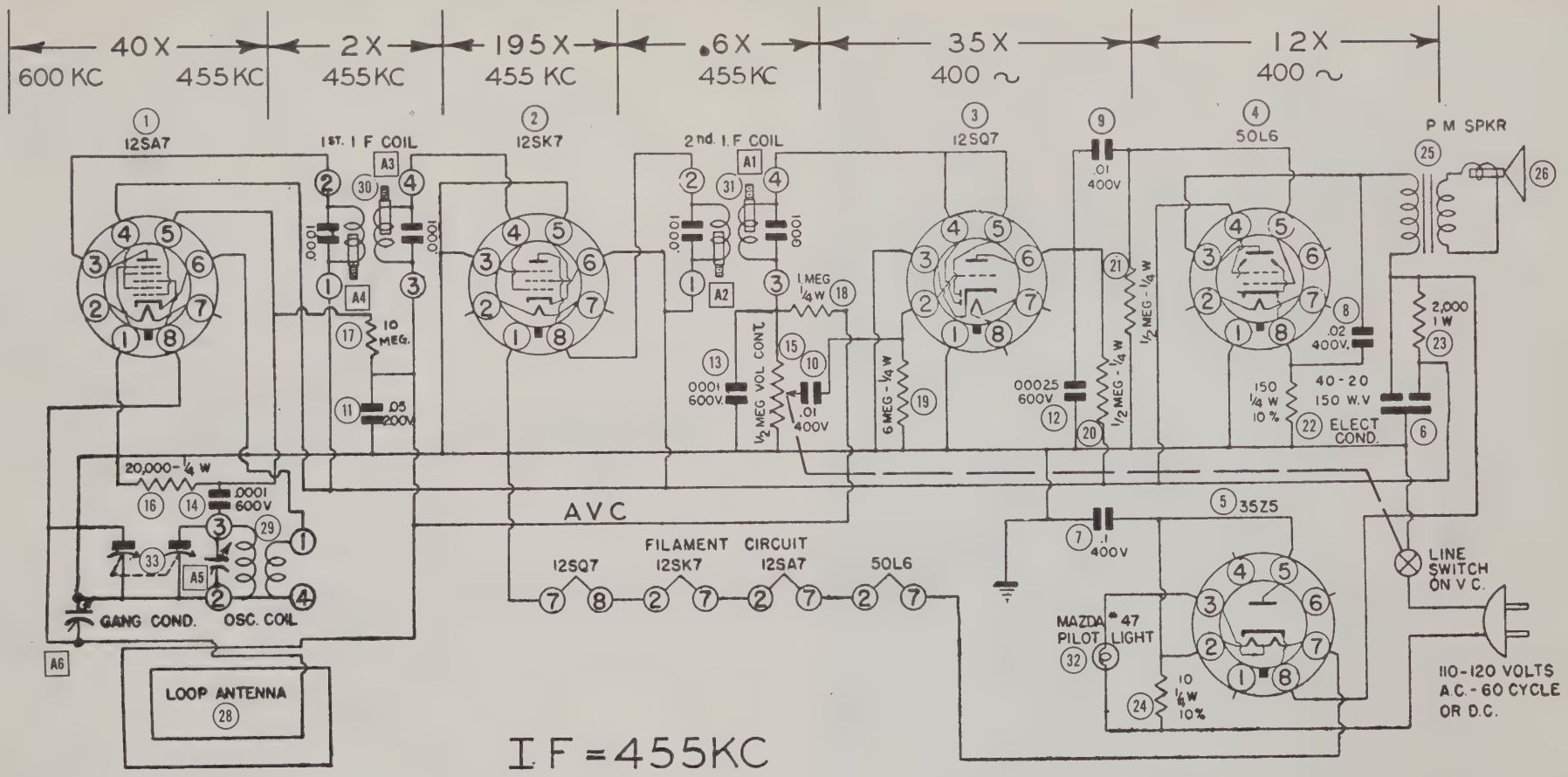
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



MANTOLA
MODEL R-7543

MANTOLA
MODEL R-7543



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	25V.AC	92V.DC	92V.DC	-6.1V.DC	0V.	37V.AC	-.63V.DC
2	12SK7GT	0V.	13V.AC	0V.	-.63V.DC	0V.	92V.DC	25V.AC	92V.DC
3	12SQ7GT	0V.	-.68V.DC	0V.	-.53V.DC	-.53V.DC	38V.DC	13V.AC	0V.
4	50L6GT	0V.	37V.AC	128V.DC	92V.DC	0V.	0V.	88V.AC	5.9V.DC
5	35Z5GT	0V.	117V.AC	113V.AC	0V.	117V.AC	117V.AC	88V.AC	135V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	24Ω	95KΩ	95KΩ	18KΩ	.8Ω	36Ω	1.1MEG.
2	12SK7GT	0Ω	12Ω	0Ω	1.1MEG.	0Ω	95KΩ	24Ω	95KΩ
3	12SQ7GT	0Ω	4 MEG.	0Ω	380KΩ	380KΩ	700KΩ	12Ω	0Ω
4	50L6GT	0Ω	36Ω	95KΩ	95KΩ	500KΩ	INF.	80Ω	135Ω
5	35Z5GT	INF.	108Ω	102Ω	INF.	108Ω	108Ω	80Ω	95KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

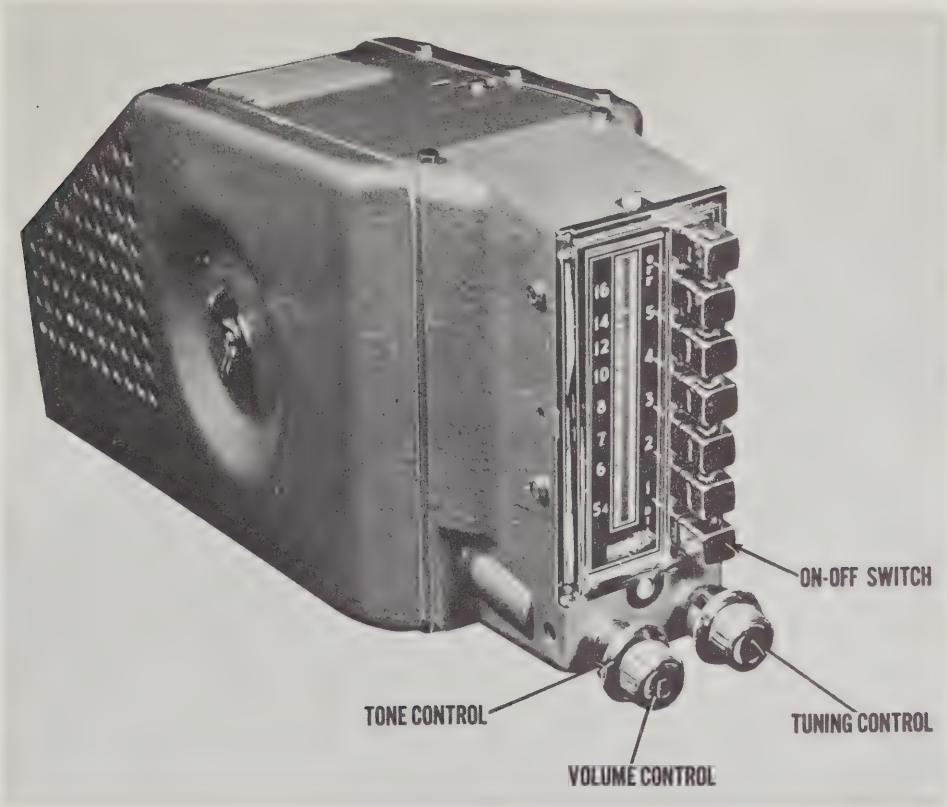
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

478-23

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MOPAR
MODEL 802 (PHILCO C-4608)



MOPAR
MODEL 802 (PHILCO C-4608)

MOPAR MODEL 802

TRADE NAME Mopar, Model 802 (Philco C-4608), (For 1946-1947 Plymouth, Dodge, DeSoto, Chrysler)
SUPPLIER Chrysler Corp., Detroit 31, Mich.
TYPE SET Battery Operated Custom Built Automotive Receiver with Pushbutton Tuning.
TUBES (EIGHT) Types, 7A7 RF Amp., 7B8 Converter, 7A7 IF Amp., 7B6 Det.-AVC-AF, 7A4 (Phase Inverter), (2) 7C5 Power Output, 7Y4 Rectifier.

POWER SUPPLY 6 Volt Storage Battery
TUNING RANGE—BROADCAST 540-1600KC RATING 6.8 Amp. @ 6.3 Volts DC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning slugs completely out and set pointer at 1600KC. Tone control should be at "voice" position. Volume and sensitivy controls should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. After receiver is re-installed in car tune in weak station near 1400KC and adjust A6 for maximum volume

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	20MMFD.	High side to Pin 6 (grid) 7B8. Low side to chassis.	455KC	1600KC	Across voice coil	A1, A2, A3, A4.	Short Pin 4 of 7B8 to chassis. Adjust for maximum output.
2	20MMFD.	"	"	"	"	A5	Adjust for minimum output.
3	20MMF in series with shielded ant. lead	High side to ant. receptacle. Low side to chassis.	1500KC	Tune for maximum output.	"	A6	Remove short on Pin 4 of 7B8. Adjust for maximum output.
4	"	"	580KC	580KC	"	A7	Rock tuning cap and adjust for maximum output.
5	"	"	550KC	Tune for maximum output.	"	A8	Leave dial at this setting. Turn signal generator to 1460 KC and increase output. Adjust A8 for minimum output.
6	"	"	1500KC	Tune for maximum output.	"	A6	Adjust for maximum output.
7	"	"	580KC	580KC	"	A7	Rock tuning cap. and adjust for maximum output.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO MOPAR PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	7A7	7A7	8V	
2	Converter	7B8	7B8	8X	
3	IF Amp.	7A7	7A7	8V	
4	Det.-AVC-AF	7B6	7B6	8W	
5	Phase Inverter	7A4	7A4	5AC	
6	Power Output	7C5	7C5	6AA	
7	Power Output	7C5	7C5	6AA	
8	Rectifier	7Y4	7Y4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO MOPAR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	20	350	61-0150			FP424	DY-404	EL415	● Filter
B	10	350							■ "
C	5	300							▲ "
D	10	25							Cath. Bypass
10	.5	100	61-0137	484-.5	DT4P5	TP431	S-4-5	TC-5	Hash Filter
11	.5	100	61-0137	484-.5	DT4P5	TP431	S-4-5	TC-5	" "
12	.5	100	61-0134	484-.5	DT4P5	TP431	S-4-5	TC-5	" "
13	.005	1600	61-0153	1684-005	MD16D5	OT371	TM-16-005	TR-25	Buffer
14	.006	1200	61-0105	1684-006	MD16D6	OW344	TM-16-006	TR-26	Output Plate Bypass
15	.01	600	61-0120	684-01	DT6S1	TP410	TM-6-01	TC-11	Audio Coupling
16	.01	600	61-0169	684-01	DT6S1	TP410	TM-6-01	TC-11	" "
17	.004	600	61-0179	684-004	DT6D4	TP407	TM-6-004	TC-24	" "
18	.004	600	61-0179	684-004	DT6D4	TP407	TM-6-004	TC-24	" "
19	.05	200	61-0101	484-05	DT4S5	TP426	S-4-05	TC-15	" "
20	.02	400	61-0154	484-02	DT4S2	TP423	S-6-02	TC-12	Tone Compensation
21	.01	600	6010105007	684-01	DT6S1	TP410	TM-6-01	TC-11	" "
22	.05	200	61-0101	484-05	DT4S5	TP426	S-4-05	TC-15	" "
23	.05	200	61-0101	484-05	DT4S5	TP426	S-4-05	TC-15	IF Cath. Bypass
24	.05	400	61-0111	484-05	DT4S5	TP426	S-4-05	TC-15	Screen Bypass
25	.05	200	61-0101	484-05	DT4S5	TP426	S-4-05	TC-15	Cath. Bypass
26	.05	200	61-0101	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
27	250	500	6010255007	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Hash Filter
28	250	500	6010255007	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	" "
29	250	500	6010255007	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Voice Coil Bypass
30	100	500	6010145307	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Audio Plate Bypass
31	250	500	6010255007	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Osc. Grid Capacitor
32	250	500	6010255007	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Osc. Anode Coupling
33	360	500	301220-13						Fixed Trimmer
34	55		61-0149						" " Cer.
35	250	500	6010125500	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Ant. Coupling

CONTROLS

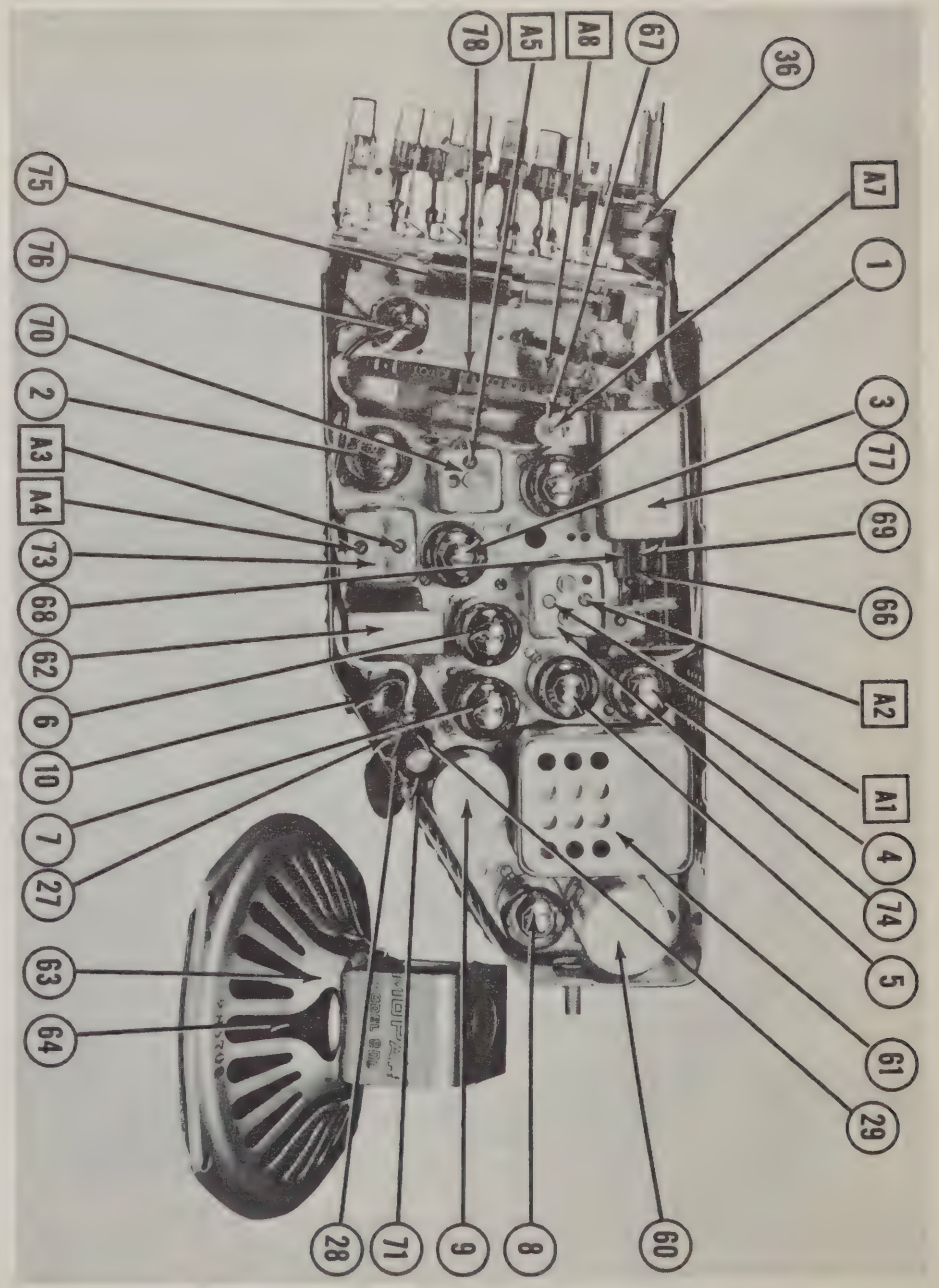
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO MOPAR PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
36A	350KΩ	1	67-0040				Volume Control-See Note
B	4 Meg.						Tone Control - See Note
80	150 to 850	1	67-0025				Sensitivity Control‡

Note - This is a dual control operated by concentric shafts.
‡Part of Item 77.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO MOPAR PART No.	IRC PART No.	IDENTIFICATION CODES
37	1 Meg.	‡	66-5101540	BTS-1 Meg.	Br.-Blk.-Grn. RF Grid
38	15KΩ	‡	66-3153340	BTS-15K	Br.-Grn.-Or. RF Plate Load
39	100KΩ	‡	66-4101540	BTS-100K	Br.-Blk.-Yl. Oscillator Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO MOPAR PART No.	IRC PART No.	
40	22KΩ	½	66-3223340	BTS-22K	Red-Red-Or. Oscillator Anode Load
41	27KΩ	1	66-3274340	BTA-27K	Red-Vi.-Or. Voltage Dropping
42	470Ω	½		BTS-470	Yl.-Vi.-Br. IF Cathode
43	1 Meg.	½	66-5101540	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
44	6800Ω	½	66-2681540	BTS-6800	Blue-Gray-Red Tone Compensation
45	22000	½	66-2221540	BTS-2200	Red-Red-Red Tone Compensation
46	4700Ω	½	66-2471340	BTS-4700	Yl.-Vi.-Red Tone Compensation
47	1 Meg	½	66-5101540	BTS-1 Meg.	Br.-Blk.-Grn. Tone Compensation
48	220KΩ	½	66-4221540	BTS-220K	Red-Red-Yl. Tone Compensation
49	10 Meg.	½	66-6101540	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
50	220KΩ	½	66-4221540	BTS-220K	Red-Red-Yl. AF Plate Load
51	220KΩ	½	66-4221540	BTS-220K	Red-Red-Yl. Phase Inverter Cathode
52	10 Meg.	½	66-6101540	BTS-10 Meg.	Br.-Blk.-Blue Phase Inverter Grid
53	220KΩ	½	66-4221540	BTS-220K	Red-Red-Yl. Phase Inverter Plate Load
54	470KΩ	½	66-4471540	BTS-470K	Yl.-Vi.-Yl. Output Grid
55	470KΩ	½	66-4471540	BTS-470K	Yl.-Vi.-Yl. Output Grid
56	330Ω	1	66-1334340	BW-1-330	Or.-Or.-Br. Output Cathode
57	1000Ω	1	66-2104340	BTA-1000	Br.-Blk.-Red Filter
58	1000Ω	1	66-2104340	BTA-1000	Br.-Blk.-Red Filter
59	100Ω	1	66-1104340	BW-1-100	Br.-Blk.-Br. Hash Suppression

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				PHILCO MOPAR PART No.	MALLORY PART No.	RADIART PART No.	
60	Interrupter	6.3	115~	83-0026	859	5326-P	

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PHILCO MOPAR PART No.	STANCOR PART No.	THORDARSON PART No.	
61	5.7 VDC @ 1.9A	440V CT @ .055A			65-0347			

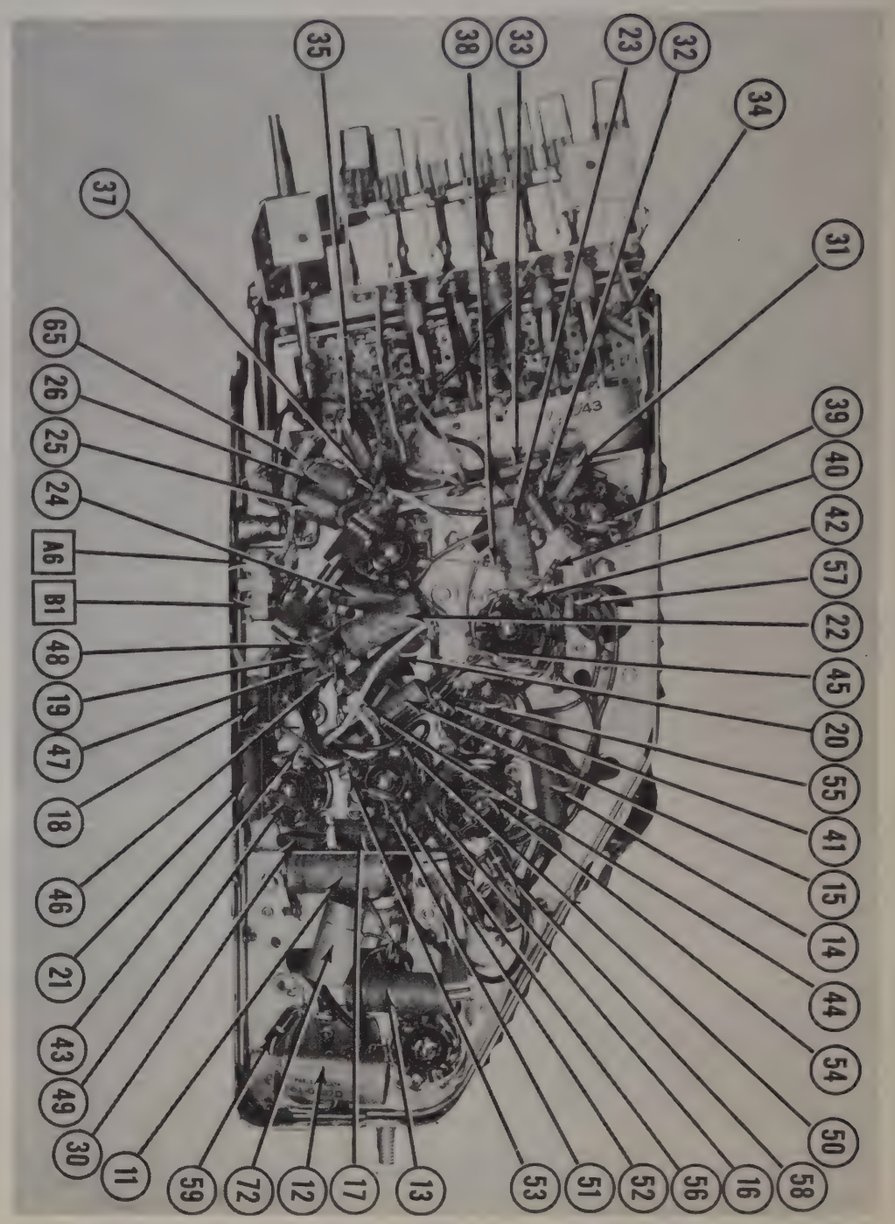
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO MOPAR PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
62	10,000Ω CT	3.7Ω	640Ω CT	.35Ω	65-0363	A-3856*	T22S47*		*Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PHILCO MOPAR PART No.	JENSEN PART No.		
	FIELD RES.	VC IMP.				
63	4.1Ω	3.7Ω	73-0042			Original Part No. 36-1609.
	CONE DIA.	VC DIA.				
64	6-13/16"	7/8"	91-0164			

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	PHILCO MOPAR PART No.	MEISSNER PART No.	
65	Ant.Choke Coil		7Ω	65-0437		
66	Ant. Coil Assby.		16Ω	65-0439		Items 66, 68 and 69 are part of manual tuning assembly #77-0962.
67	Osc. Shunt Coil	2.5Ω	5.5Ω	65-0440		
68	Osc. Coil Assby.		4Ω	65-0439		
69	Image Trap Assby.		30Ω	65-0382		
70	RF & IF Wave Trap Trans.			65-0421		
71	RF Choke		0Ω	32-1644		
72	" "		0Ω	65-0389		
73	Input IF	10Ω	16Ω	65-0365	16-6658	
74	Output IF	26Ω		65-0366	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PHILCO MOPAR PART No.		
75	Bayonet	6-8	0.25	Blue	34-2064		Type 44

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO MOPAR PART No.	NOTES
76	On-Off Switch	67-0046	
77	Tuning Assby.	77-0962	Manual Unit
78	" "	77-0943	Pushbutton Unit
79	Fuse	45-2559	
A6 B1	Dual Trimmer	77-0788	Ant. Adj. (Manual Tuning) #5 Pushbutton Ant. Adj.
	Dial Glass	27-5898	Dodge
	" "	27-5897	Plymouth, Mopar

PUSHBUTTON ADJUSTMENTS

Range of pushbuttons from top to bottom is 850-1600KC, 750-1450KC, 710-1380KC, 625-1170KC, 535-1000KC.

Make a list of stations desired to be set up making certain that each station falls within the range of button to be set up.

1. Turn set on and allow it to warm up for about 20 minutes.
2. Remove push button covers.
3. Depress dial button and manually tune in station desired to be set up with button #1.
4. Depress button #1 and tune in station with knurled end of button #1.
5. Check accuracy of setting by tuning in the station manually. Then depress button #1. If setting is off retune with the knurled end of button #1.
6. To set up the remaining buttons follow the procedure as outlined above.
7. After button #5 is set up, leave button depressed and adjust B1 for maximum volume.
8. Replace button covers.

Buttons may be set up outside of car but after installation they should all be given a final adjustment.

VOLTAGE READINGS

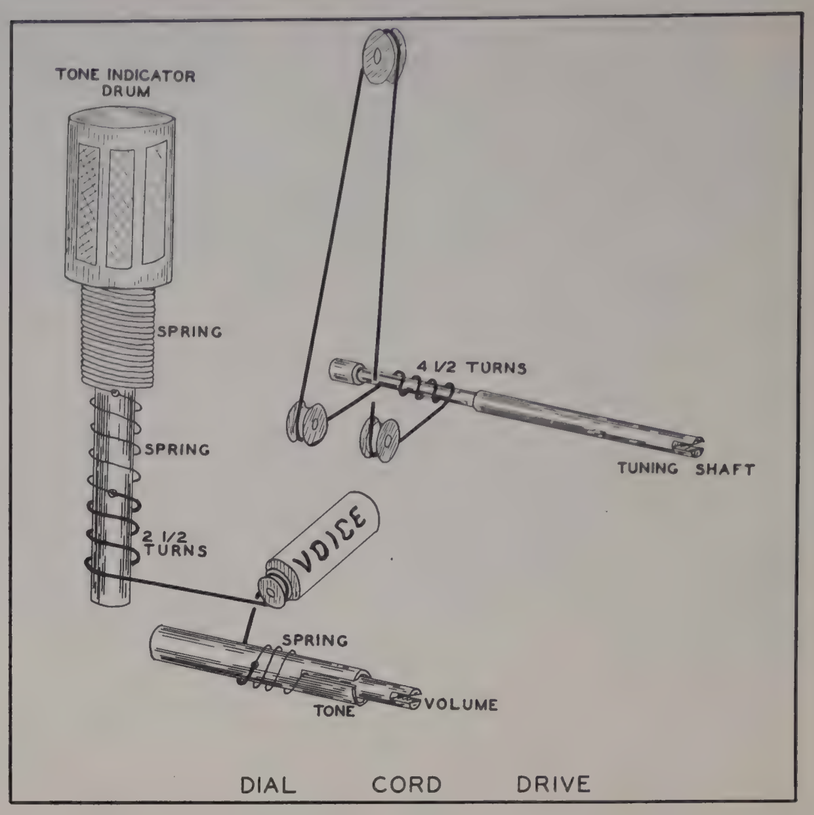
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A7	0 V.	140 V. DC	81 V. DC	0 V.	0 V.	0 V.	3.3 V. DC	5.6 V. DC
2	7B8	0 V.	183 V. DC	128 V. DC	0 V.	81 V. DC	-.05 V DC	3.3 V. DC	5.6 V. DC
3	7A7	0 V.	193 V. DC	81 V. DC	0 V.	0 V.	0 V.	2.4 V. DC	5.6 V. DC
4	7B6	0 V.	100 V. DC	-.4 V. DC	0 V.	-.05 V. DC	-.2 V. DC	0 V.	5.6 V. DC
5	7A4	0 V.	100 V. DC	185 V. DC	0 V.	100 V. DC	.1 V. DC	83 V. DC	5.6 V. DC
6	7C5	0 V.	210 V. DC	195 V. DC	0 V.	0 V.	0 V.	14 V. DC	5.6 V. DC
7	7C5	0 V.	210 V. DC	195 V. DC	0 V.	0 V.	0 V.	14 V. DC	5.6 V. DC
8	7Y4	5.6 V. DC	0 V.	200 V. AC	0 V.	0 V.	212 V. AC	232 V. DC	0 V.

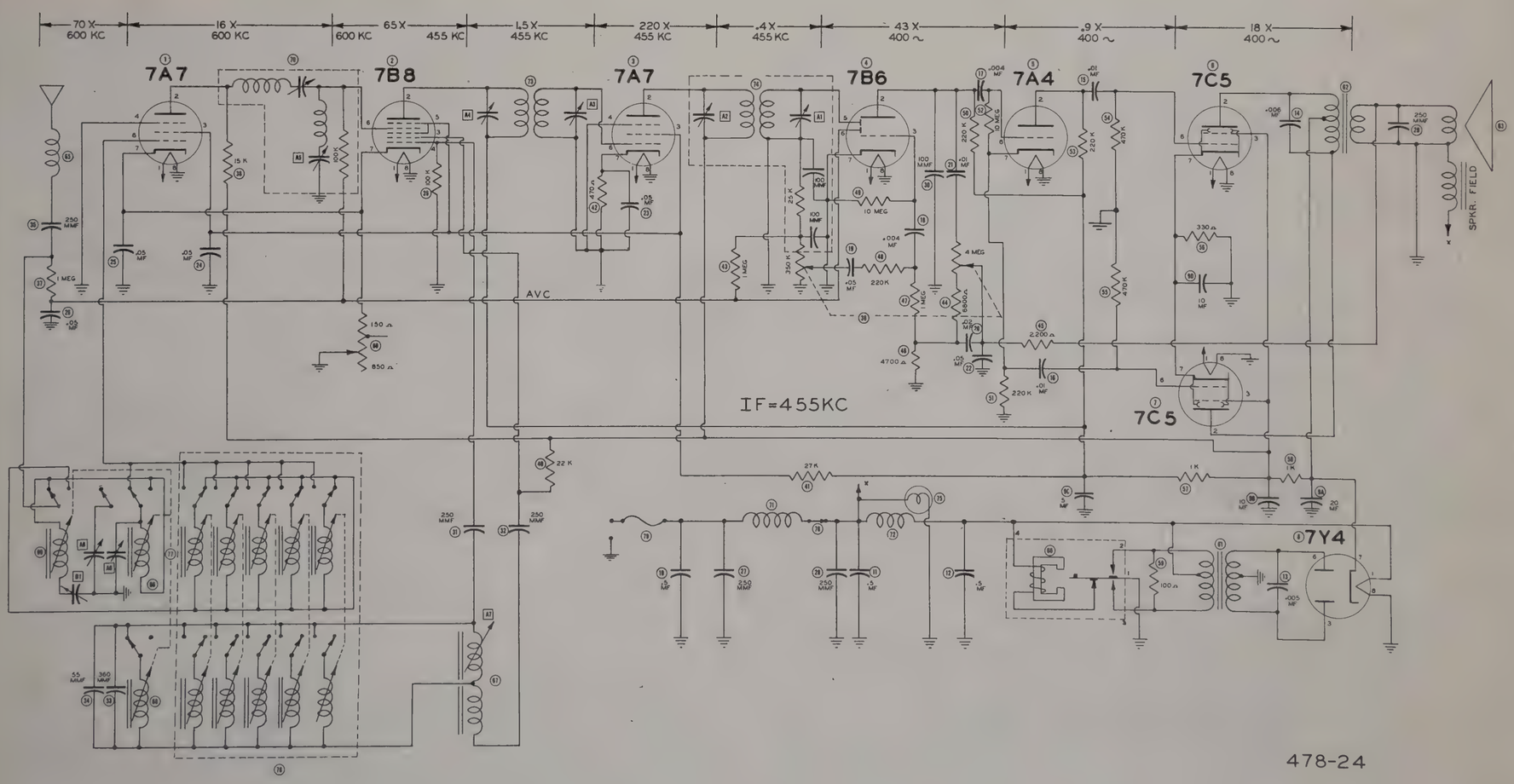
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A7	0 Ω	205 KΩ	220 KΩ	0 Ω	0 Ω	2.3 MEG.	300 Ω	.1 Ω
2	7B8	0 Ω	190 KΩ	220 KΩ	90 KΩ	220 KΩ	1.3 MEG.	300 Ω	.1 Ω
3	7A7	0 Ω	190 KΩ	220 KΩ	0 Ω	0 Ω	15 Ω	400 Ω	.1 Ω
4	7B6	0 Ω	420 KΩ	10 MEG.	0 Ω	1.2 MEG.	395 K Ω	0 Ω	.1 Ω
5	7A4	0 Ω	420 KΩ	190 KΩ	1900 Ω	420 KΩ	10 MEG.	200 KΩ	.1 Ω
6	7C5	.1 Ω	190 KΩ	190 KΩ	INF.	INF.	370 KΩ	280 Ω	0 Ω
7	7C5	.1 Ω	190 KΩ	190 KΩ	INF.	INF.	420 KΩ	280 Ω	0 Ω
8	7Y4	.1 Ω	INF.	350 Ω	INF.	INF.	400 Ω	190 KΩ	0 Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

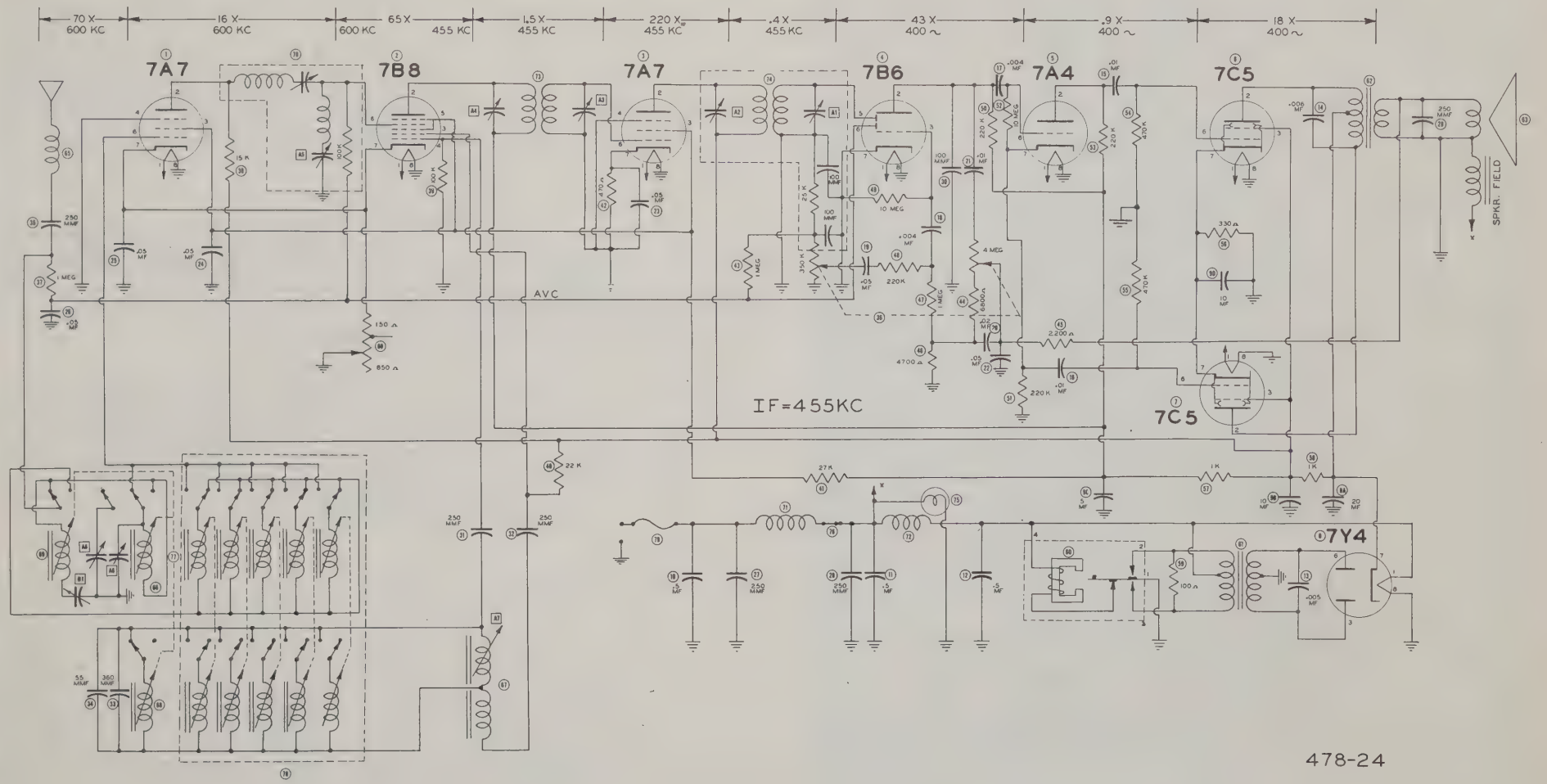
1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.



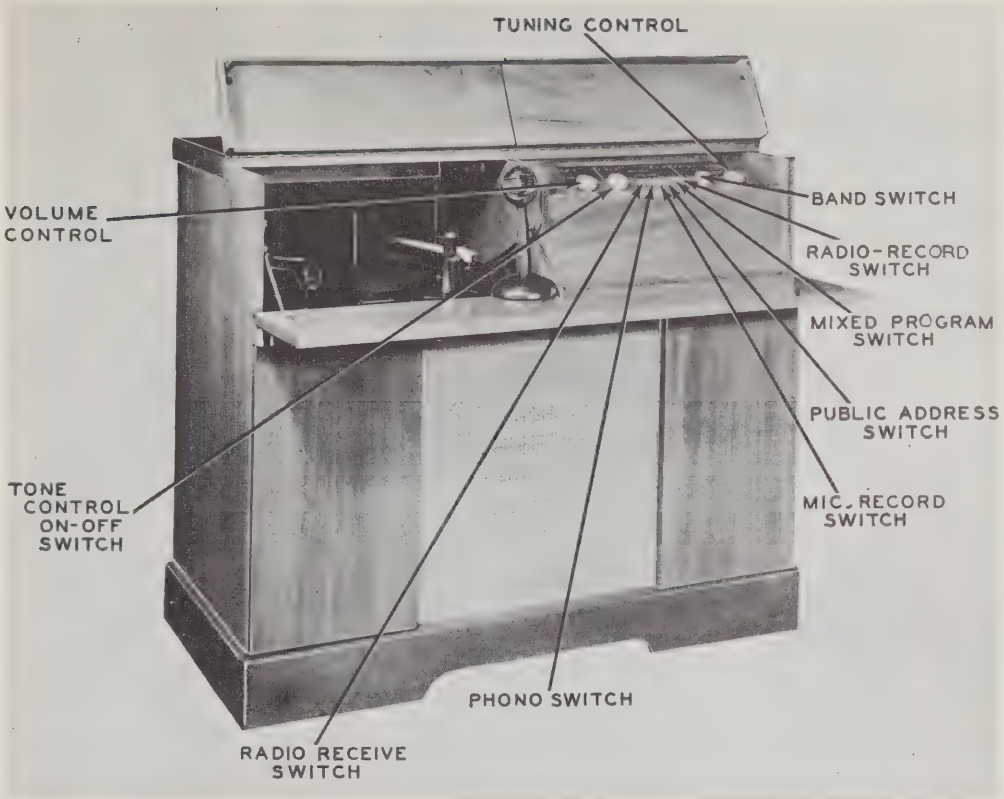


478-24

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



PACKARD-BELL
MODEL 1063

PACKARD-BELL
MODEL 1063

PACKARD-BELL MODEL 1063

TRADE NAME	Packard-Bell, Model 1063
MANUFACTURER	Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles, Calif.
TYPE SET	AC Operated Radio-Phono-P.A. System-2 Band Superheterodyne with Loop Antenna
TUBES (TEN)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SF7 Det.-Exp. Amp., 6H6 Exp. Rect.-AVC, 6SQ7 Mic. Amp., 6SF7 AF Amp., 6H6 Comp. Rect., 6V6GT/G Power Output, 5Y3GT/G Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .650 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1740KC — SHORT WAVE 6.0 - 18.0 MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn-variable fully closed and set pointer at last reference mark at left end of dial. Set volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. For alignment of the RF sections connect the output of the signal generator to two turns of wire approximately 12 inches in diameter. Place in line with and about two feet from the receiver loop. Use insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to Pin 8 of 6SA7. Low side to chassis.	455KC	BC	540KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2		Loop	1750KC	"	1750KC (Variable fully open)	"	A5	" " " "
3		Loop	600KC	"	600KC	"	A6	" " " "
4		"	1500KC	"	Tune for maximum output.	"	A7,A8	" " " "
	Repeat last three steps.							
5		Loop	18.0MC	SW	18.0MC	"	A9	" " " "
6		"	15.0MC	"	Tune for maximum output.	"	A10,A11	Rock variable and adjust for maximum output.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

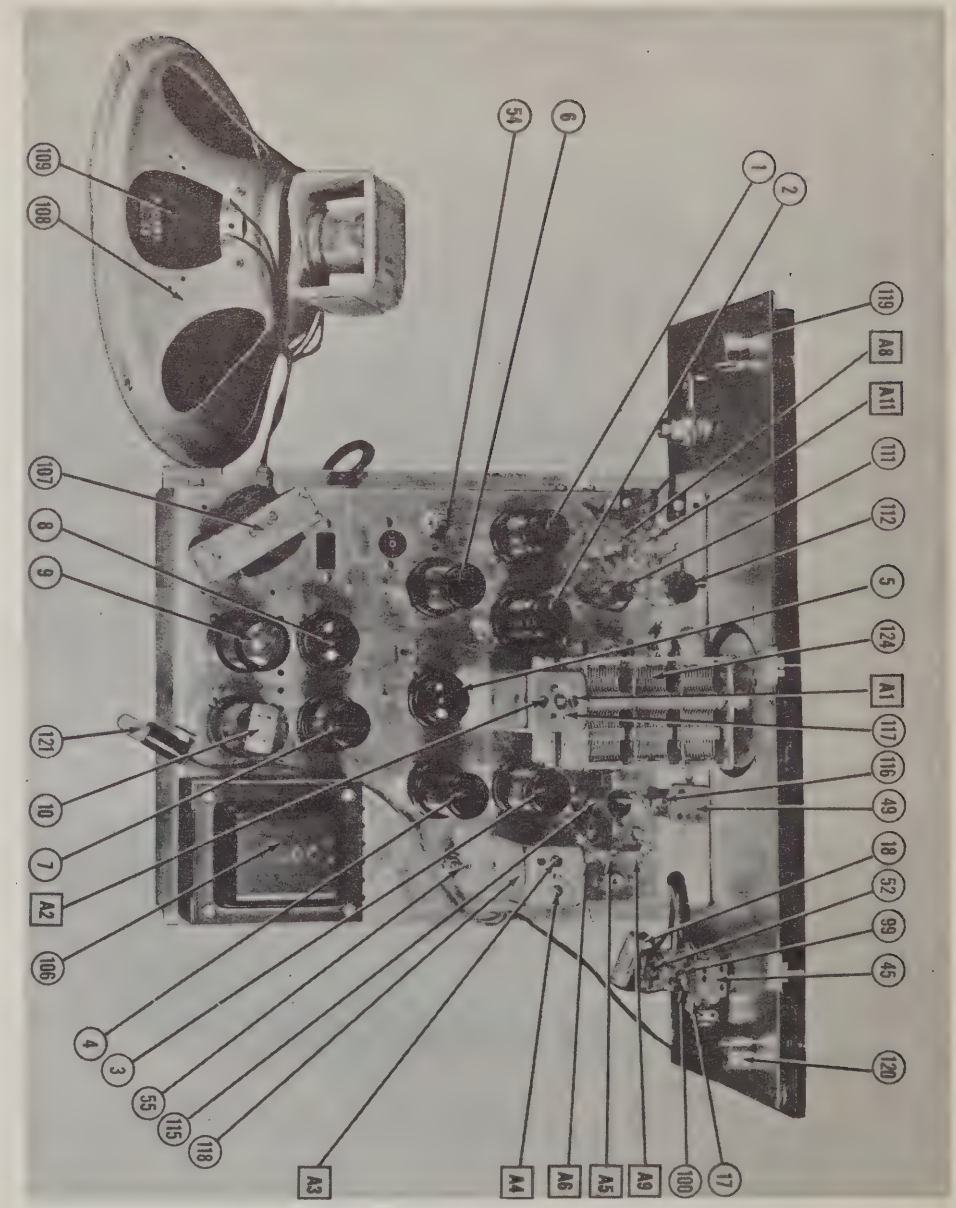
ITEM No.	USE	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-Exp. Amp.	6SF7	6SF7	7AZ	
5	Exp. Rect.-AVC	6H6	6H6	7Q	
6	Mic. Amp.	6SQ7	6SQ7	8Q	
7	AF Amp..	6SF7	6SF7	7AZ	
8	Comp. Rect.	6H6	6H6	7Q	
9	Power Output	6V6GT/G	6V6GT/G	7AC	
10	Rectifier	5Y3GT/G	5Y3GT/G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PACKARD-BELL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
11	20	450	24001	PRS450-20	BR2045	TC75	M-20-450	UT-20	Filter
12	20	450	24001	PRS450-20	BR2045	TC75	M-20-450	UT-20	"
13	10	450	24002	PRS450-10	BR1045	TC72	M-10-450	UT-12	"
14	10	450	24002	PRS450-10	BR1045	TC72	M-10-450	UT-12	"
15	25	25	24006	PRS25-25	BR252A	TC26	M-25-25	TA-25	1st AF Cath. Bypass
16A	.006	600	23901	684-006	DT6D6	TP409	S-6-006	TC-26	Line Bypass
B	.006	600	23901	684-006	DT6D6	TP409	S-6-006	TC-26	"
17	.01	600	23006	684-01	DT6S1	TP410	S-6-01	TC-11	Tone Compensation
18	.003	600	23016	684-003	DT6D3	TP406	S-6-003	TC-23	"
19	.02	600	23007	684-02	DT6S2	TP412	S-6-02	TC-12	Audio Coupling
20	.2	200	23018	484-.2	DT4P2	TP429	S-4-2	TC-2	Bias Filter
21	.02	600	23007	684-02	DT6S2	TP412	S-6-02	TC-12	Audio Coupling
22	.002	600	23002	684-002	DT6D2	TP405	S-6-002	TC-22	Output Plate Bypass
23	.05	200	23017	484-05	DT4S5	TP426	S-4-05	TC-15	Comp. Filter
24	.001	600	23001	684-001	DT6D1	TP404	S-6-001	TC-11	Comp. Coupling
25	.2	400	23020	484-.2	DT4P2	TP428	S-4-2	TC-2	1st AF Screen Bypass
26	.02	600	23007	684-02	DT6S2	TP412	S-6-02	TC-12	Audio Coupling
27	.005	600	23004	684-005	DT6D5	TP408	S-6-005	TC-25	"
28	.1	200	23019	484-.1	DT4P1	TP428	S-4-1	TC-1	Exp.-Comp. Filter
29	.005	600	23004	684-005	DT6D5	TP408	S-6-005	TC-25	Audio Coupling
30	.05	200	23017	484-05	DT4S5	TP426	S-4-05	TC-15	Expansion Filter
31	.2	200	23018	484-.2	DT4P2	TP429	S-4-2	TC-2	Expander Filter
32	.01	600	23006	684-01	DT6S1	TP412	S-6-01	TC-11	Exp. Coupling
33	.05	600	23010	684-05	DT6S5	TP415	S-6-05	TC-15	Expander Coupling
34	.05	600	23010	684-05	DT6S5	TP415	S-6-05	TC-15	6SF7 Screen Bypass
35	.005	600	23004	684-005	DT6D5	TP408	S-6-005	TC-25	Audio Coupling
36	.003	600	23016	684-003	DT6D3	TP406	S-6-003	TC-23	"
37	.01	600	23006	684-01	DT6S1	TP410	S-6-01	TC-11	IF Plate Decoupling
38	.05	200	23017	484-05	DT4S5	TP426	S-4-05	TC-15	IF Cath. Bypass
39	.2	400	23020	484-.2	DT4P2	TP429	S-4-2	TC-2	Mic. Amp. Plate Decoup.
40	.001	600	23001	684-001	DT6D1	TP404	S-6-001	TC-21	Mic. Amp. Plate Bypass
41	.05	600	23010	684-05	DT6S5	TP415	S-6-05	TC-15	Screen Bypass
42	.05	200	23017	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
43	.01	600	23006	684-01	DT6S1	TP410	S-6-01	TC-11	RF Plate Decoupling
44	.01	600	23006	684-01	DT6S1	TP410	S-6-01	TC-11	RF Cath. Bypass
45	4000	300	23208	1467-004	1D5D4	MC463	MW.5-24	1FM-24	Tone Compensation
46	47	500	23225	1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	1st AF Plate Bypass
47	47	500	23225	1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	Osc. Grid Capacitor
48	220	500	23228	1468-0002	5W5T2	MC237	MO.5-32	1FM-32	RF Coupling
49	4900	300	23207A						Fixed Padder
50	220	500	23228	1468-0002	5W5T2	MC237	MO.5-32	1FM-32	RF Coupling
51	47	500	23225	1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	Fixed Trimmer
25	.003	600	23016	684-003	DT6D3	TP406	S-6-003	TC-23	Tone Compensation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PACKARD-BELL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
52A	1 Meg.	1	{25500A*}				Volume Control-Front Section
B	2 Meg.	1					" " -Center Section
C	500KΩ	1					" " -Rear Section
53A	3 Meg.	1	25002A	MR57	D13-140	M-67-Z	Tone Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 53A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
54A	500KΩ	1	25800	UM156	D11-133	AM-58-S	Mixer Control
B	Shaft		Not Req.	SS12	E	KSS-3	Attach to 54A per instructions
55A	500KΩ	1	25800	UM156	D11-133	AM-58-S	Mixer Control
B	Shaft		Not Req.	SS12	E	KSS-3	Attach to 55A per instructions

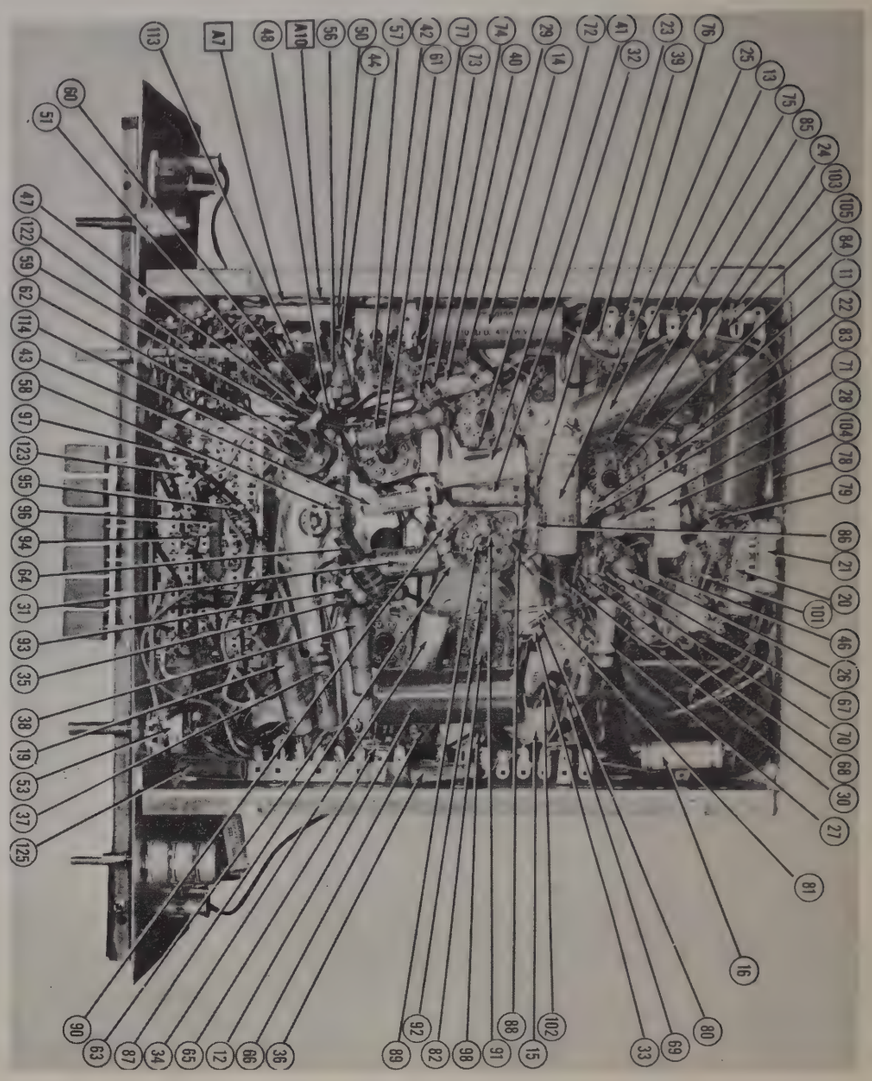
*This is a 3 section volume control actuated by one shaft.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PACKARD-BELL PART No.	IRC PART No.	IDENTIFICATION CODES
56	2.2 Meg.	½	73055	BTS-2.2 Meg.	Red-Red-Grn. RF Grid
57	220Ω	½	73017	BW-½-220	Red-Red-Br. RF Cathode
58	1000Ω	½	73025	BTS-1000	Br.-Blk-Red RF Plate Decoupling
59	1 Meg.	½	73053	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
60	1 Meg.	½	73053	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
61	22KΩ	½	73041	BTS-22K	Red-Red-Or. Oscillator Grid
62	47KΩ	½	73045	BTS-47K	Yl.-Vi.-Or. RF Coil Shunt SW
63	2.2 Meg.	½	73055	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
64	5600Ω	2	73127	BT-2-5600	Grn.-Blue-Red Screen Dropping
65	220KΩ	½	73049	BTS-220K	Red-Red-Yl. Diode Load
66	27KΩ	½	73042	BTS-27K	Red-Vi.-Or. Diode Load
67	220KΩ	½	73049	BTS-220K	Red-Red-Yl. 1st AF Plate Load
68	1.5 Meg.	½	73054	BTS-1.5 Meg.	Br.-Grn.-Grn. 1st AF Screen Dropping
69	56KΩ	1	73076	BTA-56K	Grn.-Blue-Or. Bleeder
70	4.7 Meg.	½	73057	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
71	470KΩ	½	73051	BTS-470K	Yl.-Vi.-Yl. Exp.-Comp. Network
72	1 Meg.	½	73053	BTS-1 Meg.	Br.-Blk.-Grn. Microphone Amplifier Grid
73	2700Ω	½	73030	BTS-2700	Red-Vi.-Red Microphone Amplifier Cathode
74	10KΩ	½	73037	BTS-10K	Br.-Blk.-Or. Microphone Amplifier Cathode
75	100KΩ	½	73047	BTS-100K	Br.-Blk.-Yl. Microphone Amplifier Plate Load
76	100KΩ	½	73047	BTS-100K	Br.-Blk.-Yl. Microphone Amplifier Plate Decoupling
77	220KΩ	½	73049	BTS-220K	Red-Red-Yl. Mixer Isolation
78	470KΩ	½	73051	BTS-470K	Yl.-Vi.-Yl. Output Grid
79	220KΩ	½	73049	BTS-220K	Red-Red-Yl. Bias Network
80	220KΩ	½	73049	BTS-220K	Red-Red-Yl. Expander Amplifier Plate Load
81	470KΩ	½	73051	BTS-470K	Yl.-Vi.-Yl. Expander Amplifier Screen Dropping
82	22KΩ	½	73041	BTS-22K	Red-Red-Or. Expander Amplifier Screen Bleeder
83	220KΩ	½	73049	BTS-220K	Red-Red-Yl. Compression Diode Load
84	470KΩ	½	73051	BTS-470K	Yl.-Vi.-Yl. Compression Voltage Divider
85	1.5 Meg.	½	73054	BTS-1.5 Meg.	Br.-Grn.-Grn. Compression Voltage Divider
86	470KΩ	½	73051	BTS-470K	Yl.-Vi.-Yl. Expander Amplifier Diode
87	4.7 Meg.	½	73057	BTS-4.7 Meg.	Yl.-Vi.-Grn. Expander Diode Load
88	56KΩ	1	73076	BTA-56K	Grn.-Blue-Or. Delayed Expansion Bleeder
89	560Ω	½	73022	BTS-560	Grn.-Blue-Br. Delayed Expansion Bleeder
90	4.7 Meg.	½	73057	BTS-4.7 Meg.	Yl.-Vi.-Grn. Delayed Expansion Diode Load
91	4.7 Meg.	½	73057	BTS-4.7 Meg.	Yl.-Vi.-Grn. Expansion Network
92	4.7 Meg.	½	73057	BTS-4.7 Meg.	Yl.-Vi.-Grn. Expansion Amp. Grid
93	470Ω	½		BTS-470	Yl.-Vi.-Br. IF Cathode-See Note
94	390Ω	½	73020	BW-½-390	Or.-White-Br. Bias
95	4700Ω	½	73033	BTS-4700	Yl.-Vi.-Red Bias
96	.5Ω	1	73910	BW-1-.47	Speaker Muting
97	1200Ω	½	73026	BTS-1200	Br.-Red-Red Bias
98	220KΩ	½	73049	BTS-220K	Red-Red-Yl. Mixer Isolation
99	15KΩ	½	73039	BTS-15K	Br.-Grn.-Or. Tone Compensation
100	56KΩ	½	73060	BTS-56K	Grn.-Blue-Or. Tone Compensation
101	180Ω	2	73077	BW-2-180	Br.-Gray-Br. Bias
102	1500Ω	2	73126	BT-2-1500	Br.-Grn.-Red Filter
103	1000Ω	2	73120	BT-2-1000	Br.-Blk.-Red "
104	2500Ω	5	73907	AB-2500	"
105	15Ω	1	73903	BW-1-15	Cutter Shunt

Note-Some models use 220Ω in this application. IRC replacement BW-½-220

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA PACKARD-BELL PART No.	STANCOR PART No.	THORDARSON PART No.
106	117V AC @ .65A	700V CT .078A	5.2V AC @ 1.9A	6.3V AC @ 3.0A	89006	P-6012	T22R04

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA PACKARD-BELL PART No.	STANCOR PART No.	THORDAR'N PART No.	INSTALLATION NOTES
107	6800Ω	3.7Ω	770Ω	.7Ω	89409	A-3878*	T22S47*	*Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA PACKARD-BELL PART No.	JENSEN PART No.	INSTALLATION NOTES
	FIELD	VC IMP.			
108	PM	3.7Ω	83701	ST-120† Mod.P10-S	†Replace output transformer to match 8Ω voice coil. Remove cover.
	CONE DIA.	VC DIA.			
109	9½"	7/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PACKARD-BELL PART No.	MEISSNER PART No.
110	Loop Ant.			92194	
111	BC Ant. Coil		5Ω	29400A	
112	SW Ant. Coil		0Ω	29401A	14-1044
113	BC RF Coil	58Ω	3Ω	29102A	14-1027
114	SW RF Coil	6Ω	0Ω	29101A	14-1045
115	BC Osc.Coil	1Ω	5.8Ω	29205A	14-1040
116	SW Osc.Coil		0Ω	29201A	14-1046
117	Input IF	17Ω	16.5Ω	29004D	16-6658
118	Output IF	21Ω		29007	16-6670

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA PACKARD-BELL PART No.	INSTALLATION NOTES
119	Bayonet	6-8	0.25	Blue	54001	Type 44
120	"	"	"	"	"	"
121	"	"	"	"	"	"

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	PACKARD-BELL PART No.	NOTES
122	Bandswitch	86001A	
123	Pushbutton Assy.	86301	
124	3 Gang Var. Cap	23500C	12-463 MMF (each section)
	Dial Scale	38042	Stationized
	" "	38043	Export
	Pickup Cartridge	63026	

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs from top front panel.
2. Remove ten screws holding back cover board. Remove back cover board.
3. Remove phono-motor plug from chassis.
4. Remove phono-pickup plug from chassis.
5. Remove phono recorder plug from chassis.
6. Remove loop antenna leads from terminal strip on chassis.
7. Remove speaker plug from chassis.
8. Remove phono compartment light from bracket.
9. Remove four chassis mounting bolts. Remove chassis.
10. Remove six screws holding panel at rear of speaker. Remove panel.
11. Remove four screws holding speaker to cabinet. Remove speaker.

HOW TO CHECK EXPANSION VOLTAGE

Feed a 1 volt, 400 cycle signal into the Phono Input Plug. Make certain the phono button is depressed. Connect the leads of a vacuum tube voltmeter to the location indicated on the schematic and chassis ground. The voltage at this point should be between 3 and 4 volts positive DC. As a cross check, measure the cathode voltage of the 6SF7 Item 7, which should read about 5 volts DC. The expansion voltage should be about 1 volt or less.

HOW TO CHECK COMPRESSION VOLTAGE

Depress the Radio Record button. Feed a 1 volt 400 cycle signal across the diode load (Items 65 and 66). Connect the vacuum tube voltmeter to the location indicated on the schematic and ground. Measure the compression voltage. It should be approximately -2 to -3 volts.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

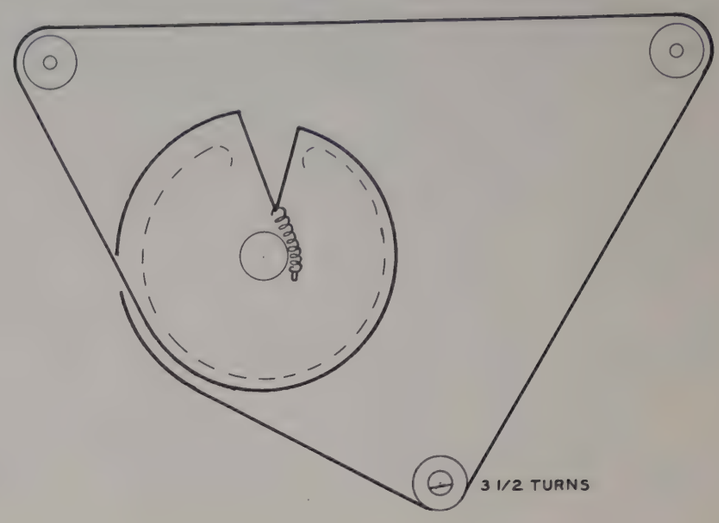
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	OV.	OV.	OV.	OV.	2.2V.DC	100V.DC	6.3V.AC	170V.DC
2	6SA7	OV.	OV.	180V.DC	100V.DC	-3.7V.DC	OV.	6.3V.AC	OV.
3	6SK7	OV.	OV.	OV.	OV.	2.3V.DC	100V.DC	6.3V.AC	180V.DC
4	6SF7	OV.	-3.5V.DC	OV.	7.2V.DC	-.25V.DC	145V.DC	6.3V.AC	OV.
5	6H6	OV.	OV.	OV.	1.8V.DC	OV.	OV.	6.3V.AC	-.2V.DC
6	6SQ7	OV.	OV.	2V.DC	OV.	OV.	150V.DC	6.3V.AC	OV.
7	6SF7	OV.	OV.	5V.DC	40V.DC	OV.	100V.DC	6.3V.AC	OV.
8	6H6	OV.	OV.	OV.	OV.	-.2V.DC	OV.	6.3V.AC	.3V.DC
9	6V6GT/G	OV.	6.3V.AC	290V.DC	240V.DC	-14.5V.DC	OV.	OV.	OV.
10	5Y3GT/G	OV.	348V.DC	OV.	350VAC	OV.	350VAC	OV.	348V.DC

RESISTANCE READINGS

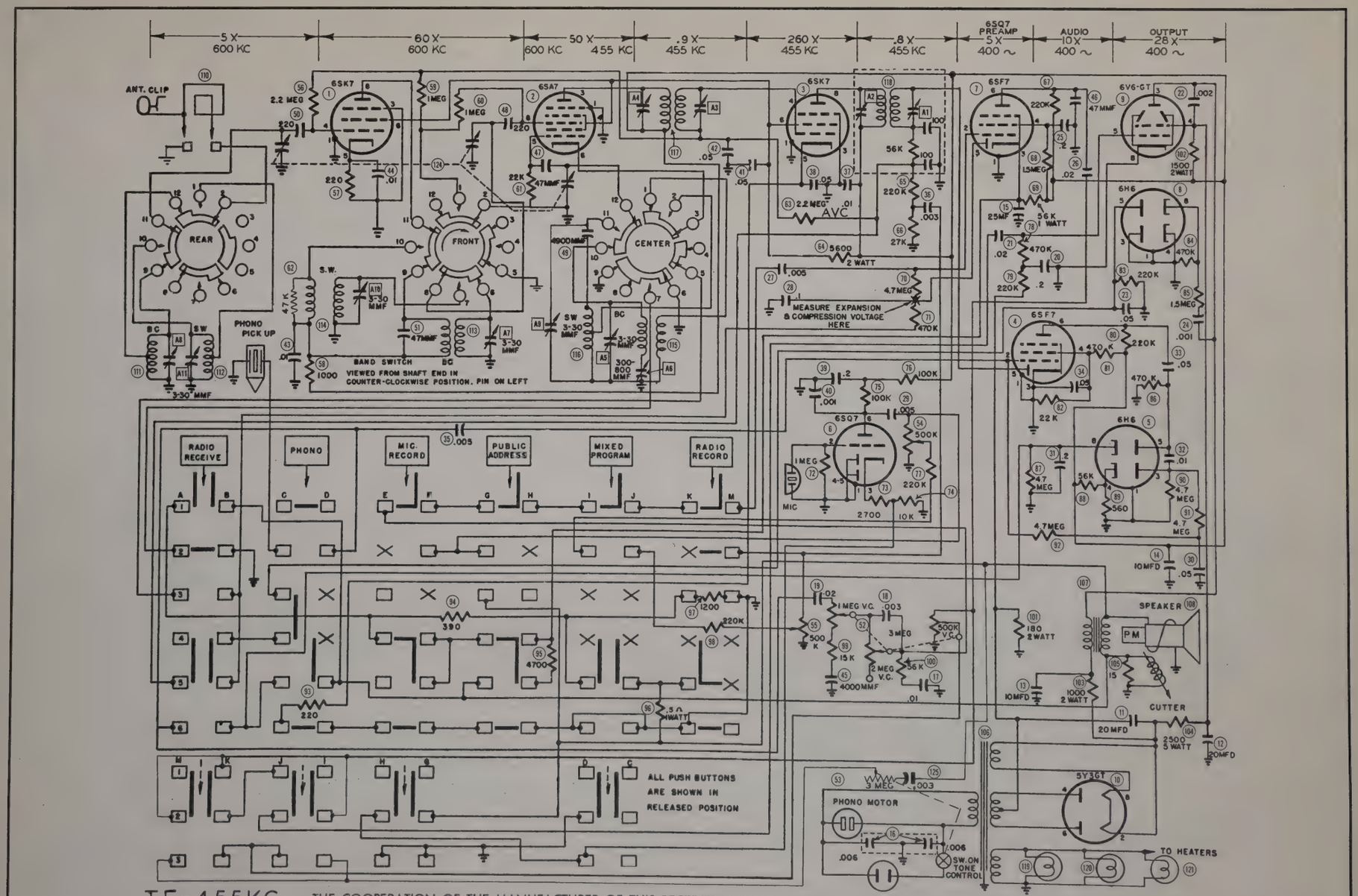
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	0Ω	4.5MEG.	200Ω	30KΩ	.1Ω	25KΩ
2	6SA7	0Ω	0Ω	25KΩ	30KΩ	21KΩ	.8Ω	.1Ω	4MEG.
3	6SK7	0Ω	0Ω	0Ω	2.5MEG.	200Ω	30KΩ	.1Ω	25KΩ
4	6SF7	0Ω	12MEG.	0Ω	18.5KΩ	300KΩ	215KΩ	.1Ω	0Ω
5	6H6	0Ω	0Ω	4.5MEG.	490Ω	390KΩ	10MEG.	.1Ω	4.5MEG.
6	6SQ7	0Ω	850KΩ	12KΩ	0Ω	0Ω	190KΩ	.1Ω	0Ω
7	6SF7	0Ω	10MEG.	1250Ω	1.5MEG.	4.5MEG.	245KΩ	.1Ω	0Ω
8	6H6	0Ω	0Ω	0Ω	0Ω	185KΩ	2.2MEG.	.1Ω	430KΩ
9	6V6GT/G	0Ω	.1Ω	25KΩ	25KΩ	580KΩ	INF.	0Ω	0Ω
10	5Y3GT/G	INF.	25KΩ	INF.	300Ω	INF.	280Ω	INF.	25KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



DIAL CORD DRIVE



IF=455KC THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE 478-25

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

PHILCO
MODEL UN 6-450

PHILCO
MODEL UN 6-450

PHILCO MODEL UN6-450

TRADE NAME Philco, Model UN6-450
MANUFACTURER Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET Battery Operated Universal Automotive Superheterodyne
TUBES (SIX) Types, 7A7 RF Amp., 7B8 Converter, 7A7 IF Amp., 7B6 Det.-AVC-AF, 7C5 Power Output, 7Y4 Rectifier.

POWER SUPPLY 6 Volt Storage Battery
TUNING RANGE—BROADCAST 550-1580KC RATING 7.1 Amp. @ 6.3 Volts DC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial. Volume should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. After receiver is re-installed in car tune in a weak station near 1400KC and adjust A6 for maximum output.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to front stator of tuning cap. Low side to chassis.	455KC	Tuning cap. closed.	Across voice coil	A1,A2, A3,A4.	Short rear stator of tuning cap. to chassis. Adjust for maximum output. Repeat adjustments.
2	30 MMFD	High side to ant. receptacle. Low side to chassis.	1580KC	Tuning cap. fully open.	"	A5	Remove short from rear stator of tuning cap. Adjust for maximum output.
3	30 MMFD	"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.
4	30 MMFD	"	580KC	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat last three steps.

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PARTS LIST AND DESCRIPTIONS

PHILCO MODEL UN6-450

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	7A7	7A7	8V	
2	Converter	7B8	7B8	8X	
3	IF Amp.	7A7	7A7	8V	
4	Det.-AVC-AF	7B6	7B6	8W	
5	Power Output	7C5	7C5	6AA	
6	Rectifier	7Y4	7Y4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	10	350	61-0089		UP4CJ5	FP328	DY-310	EL-153	▲ Filter
B	15	350							■ "
C	20	25							Cath. Bypass
8	.5	100	61-0137	484-.5	DT4P5	TP431	S-4-5	TC-5	Hash Filter
9	.5	100	61-0137	484-.5	DT4P5	TP431	S-4-5	TC-5	" " *
10	.003	1500	61-0115	1684-003	MD16D3	OT377	TM-16-003	TR-23	Buffer
11	.01	600	61-0120	684-01	DT6S1	TP410	TM-6-01	TC-11	Output Plate Bypass
12	.01	600	61-0120	684-01	DT6S1	TP410	TM-6-01	TC-11	Audio Coupling
13	.006	600	30-4504	684-006	DT6D6	TP409	TM-6-006	TC-26	Tone Compensation
14	.25	400	61-0125	484-.25	DT4P25	TP430	S-4-25	TC-2	RF Bypass Pwr. Supp.
15	.006	600	30-4504	684-006	DT6D6	TP409	TM-6-006	TC-26	Audio Coupling
16	.01	600	61-0120	684-01	DT6S1	TP410	TM-6-01	TC-11	Tone Compensation
17	.05	200	61-0122	484-05	DT4S5	TP426	S-4-05	TC-15	IF Cath. Bypass
18	.05	200	61-0122	484-05	DT4S5	TP426	S-4-05	TC-15	Conv. Cath. Bypass
19	.05	200	61-0122	484-05	DT4S5	TP426	S-4-05	TC-15	Screen Bypass
20	.05	200	61-0122	484-05	DT4S5	TP426	S-4-05	TC-15	RF Cath. Bypass
21	.05	200	61-0122	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
22	.01	600	61-0120	684-01	DT6S1	TP410	TM-6-01	TC-11	Ext. Ant. Coupling
23	250	500	6010245307	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Hash Filter
24	250	500	6010245307	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Voice Coil Bypass
25	250	500	6010245307	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Filament Bypass
26	250	500	6010245307	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Osc. Feedback
27	25		6000245307	1468-000025	5W5Q25	MC220	MO.5-425	MS-425	Fixed Trimmer
28	250	500	6010245307	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	RF Coupling
29	250	500	6010245307	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Filament Bypass
30	250	500	6010245307	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Tone Compensation

*Not used in all models.

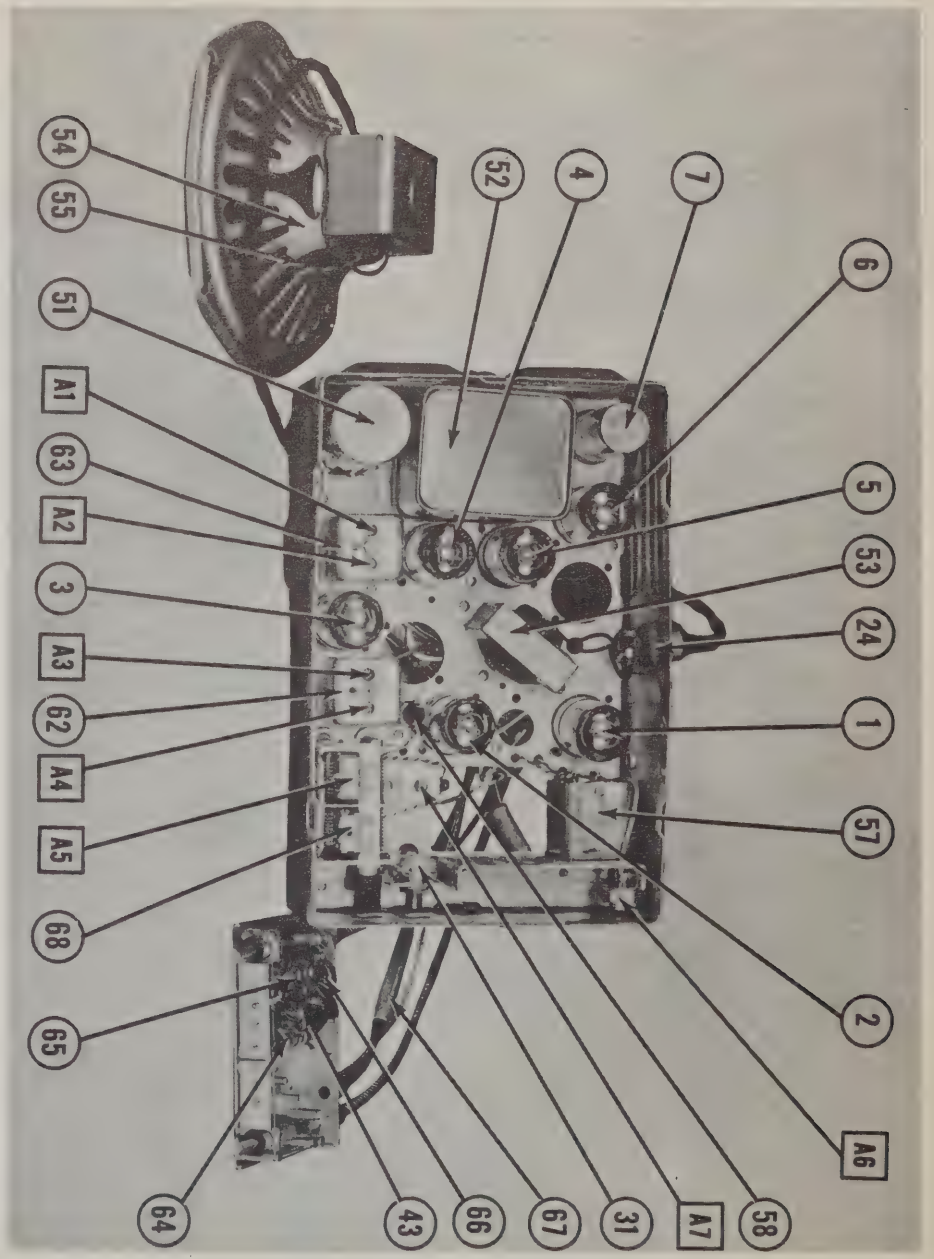
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
31	350KΩ	1	67-0032				Volume Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
32	680Ω	½	66-1683340	BTS-680	Blue-Gray-Br. RF Cathode
33	3300Ω	½	66-2333340	BTS-3300	Or.-Or.-Red RF Plate Load
34	68KΩ	½	66-3683340	BTS-68K	Blue-Gray-Or. Converter Grid
35	180Ω	½	66-1183340	BW-½-180	Br.-Gray-Br. Converter Cathode
36	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
37	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
38	68KΩ	½	66-3683340	BTS-68K	Blue-Gray-Or. Oscillator Anode Dropping
39	180Ω	½	66-1183340	BW-½-180	Br.-Gray-Br. IF Cathode
40	15KΩ	½	66-3153340	BTS-15K	Br.-Grn.-Or. Tone Compensation
41	15 Meg.	½	66-6153340	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
42	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. AF Plate Load
43	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Tone Compensation
44	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl. Output Grid
45	220Ω	1	66-4224340	BW-1-220	Red-Red-Br. Output Cathode
46	22KΩ	1	66-3224340	BTA-22K	Red-Red-Or. Screen Dropping
47	3300Ω	1	66-2334340	BTA-3300	Or.-Or.-Red Decoupling
48	1000Ω	1	66-2104340	BTA-1000	Br.-Blk.-Red Filter
49	150Ω	½	66-1153340	BW-½-150	Br.-Grn.-Br. Hash Suppression
50	220Ω	½	66-1223340	BW-½-220	Red-Red-Br. " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	RADIART PART No.	INSTALLATION NOTES
51A	Interrupter	6.3	115 ∿	83-0025	859	5326P	
B	Interrupter	6.3	115 ∿	83-0026	859	5326P	Alternate Vibrator

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	THORDARSON PART No.	
52	5.3V DC @ 3.7A	480V CT @ .053A			65-0234			

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
53	6000Ω	3.6Ω	400Ω	.8Ω	65-0408	A-3878*	T22S46*		*Drill one new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: PHILCO PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.				
54	4.2Ω	3.6Ω	73-0074-2			
	CONE DIA.	VC DIA.				
55	6-3/4"	3/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	MEISSNER PART No.	
56	Ant. Choke Coil		.5Ω	65-0168		
57	Ant. Coil		1.5Ω	65-0323		
58	Osc. Coil		8Ω	65-0420	14-1040	
59	RF Choke		0Ω	65-0037		
60	" "		0Ω	65-0433		
61	" "		0Ω	65-0452		
62	Input IF	16Ω	11Ω	65-0319	16-6658	
63	Output IF	22Ω		65-0320	16-6670	

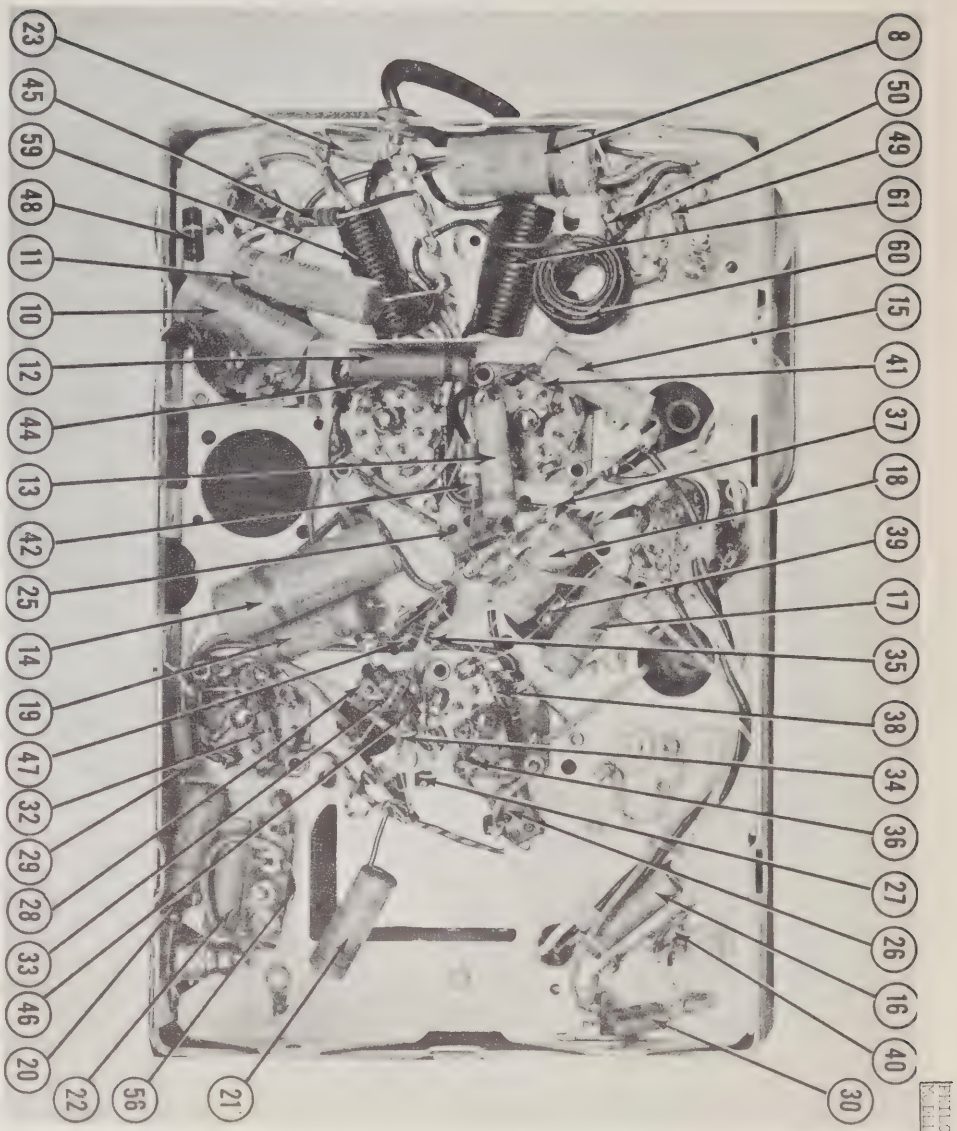
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: PHILCO PART No.		INSTALLATION NOTES
64	Bayonet	6-8	0.40	White	34-2039		Type 422

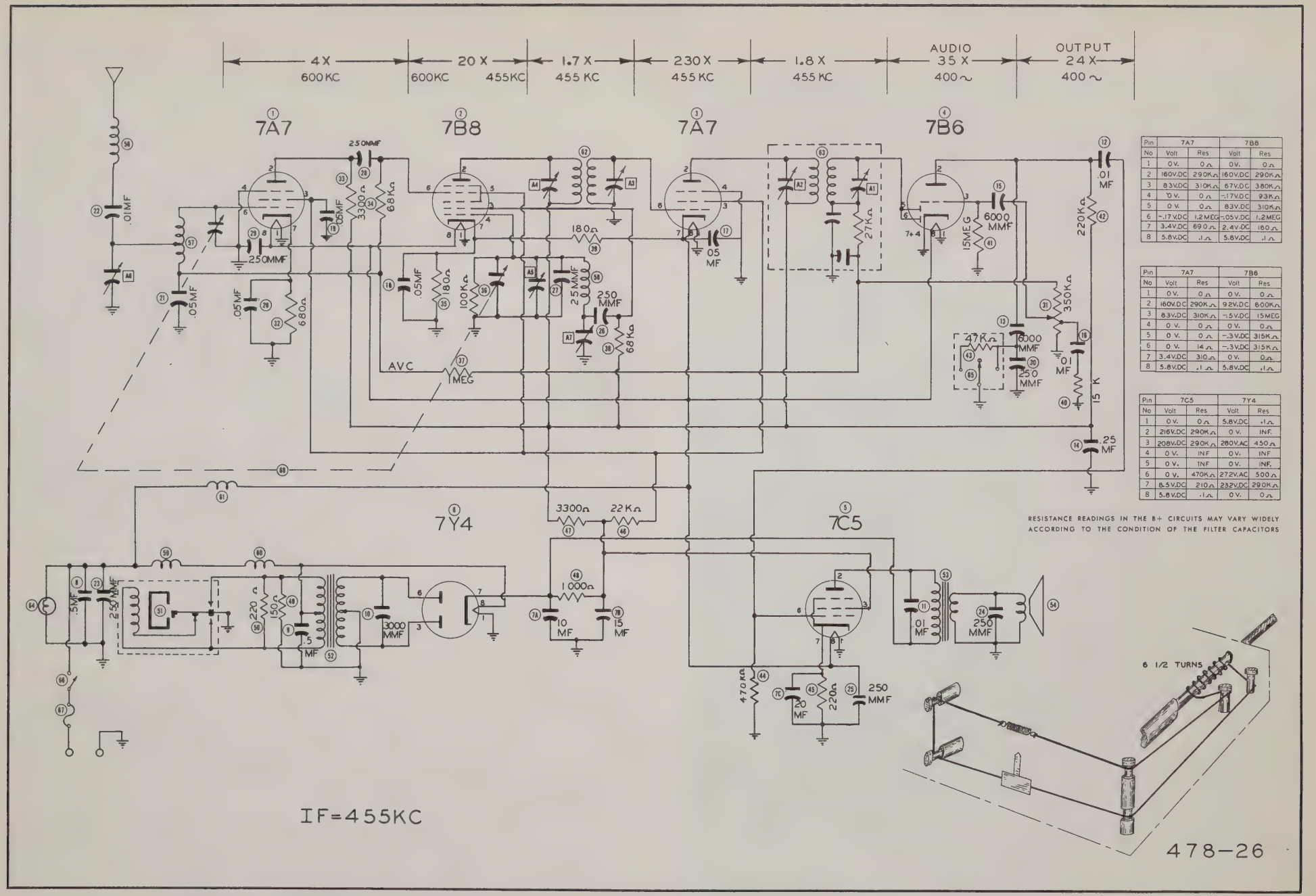
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
65	Tone Switch	77-0733	
66	On-Off Switch	85-0112	
67	Fuse	45-2559	
68	2 Gang Var. Cap.	63-0077	17-419 MMF (each section)
	Dial	55-1194	
	Pointer	57-1869	

CHASSIS—BOTTOM VIEW



PHILCO MODEL NO. 48-450



Pin No	7A7 Volt	7A7 Res	7B8 Volt	7B8 Res
1	0 V.	0 Ω	0 V.	0 Ω
2	160 V.DC	290K Ω	160 V.DC	290K Ω
3	83 V.DC	310K Ω	67 V.DC	380K Ω
4	0 V.	0 Ω	-1.7 V.DC	93K Ω
5	0 V.	0 Ω	83 V.DC	310K Ω
6	-1.7 V.DC	1.2 MEG	-.05 V.DC	1.2 MEG
7	3.4 V.DC	69 Ω	2.4 V.DC	180 Ω
8	5.8 V.DC	.1 Ω	5.8 V.DC	.1 Ω

Pin No	7A7 Volt	7A7 Res	7B6 Volt	7B6 Res
1	0 V.	0 Ω	0 V.	0 Ω
2	160 V.DC	290K Ω	92 V.DC	600K Ω
3	83 V.DC	310K Ω	-.5 V.DC	1.5 MEG
4	0 V.	0 Ω	0 V.	0 Ω
5	0 V.	0 Ω	-.3 V.DC	315K Ω
6	0 V.	14 Ω	-.3 V.DC	315K Ω
7	3.4 V.DC	310 Ω	0 V.	0 Ω
8	5.8 V.DC	.1 Ω	5.8 V.DC	.1 Ω

Pin No	7C5 Volt	7C5 Res	7Y4 Volt	7Y4 Res
1	0 V.	0 Ω	5.8 V.DC	.1 Ω
2	216 V.DC	290K Ω	0 V.	INF.
3	208 V.DC	290K Ω	280 V.AC	450 Ω
4	0 V.	INF	0 V.	INF
5	0 V.	INF	0 V.	INF.
6	0 V.	470K Ω	272 V.AC	500 Ω
7	8.5 V.DC	210 Ω	232 V.DC	290K Ω
8	5.8 V.DC	.1 Ω	0 V.	0 Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 3 volts to the AVC line.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

*TRADE MARK

PHILHARMONIC, CHASSIS MODEL RR14 (MODELS 6810, 8701, 8702, 8703, 8710, 8711, 8712)

PHILHARMONIC, CHASSIS MODEL RR14 (MODELS 6810, 8701, 8702, 8703, 8710, 8711, 8712)

PHILHARMONIC MODEL 8712

TRADE NAME	Philharmonic, Chassis Model RR14 (Models 6810, 8701, 8702, 8703, 8710, 8711, 8712)
MANUFACTURER	Espey Mfg. Co., Inc., 528 E. 72nd St., New York 21, N.Y.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne-Self Contained Loop Antenna
TUBES (EIGHT)	Types, 6SK7GT RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6J5 Phase Inverter, (2) 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .780 Amp. @ 117 Volts AC
TUNING RANGE--BROADCAST	535-1680KC — SHORT WAVE 2.2-7.2MC 6.9-23.5MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer to the + mark at low frequency end of BC band. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to center stator of tuning cap. Low side to chassis.	455KC	BC	High freq. end of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	100MMFD.	High side to ant. terminal. Low side to chassis.	1680KC	"	Tuning cap fully open.	"	A5	" " " "
3	100MMFD.	"	1500KC	"	Tune for maximum output.	"	A6,A7.	" " " "
4	100MMFD.	"	600KC	"	"	"	A8	Rock tuning cap and adjust for maximum output.
5	100MMFD.	"	1680KC	"	Tuning cap. fully open.	"	A5	Adjust for maximum output
6	.01 MFD.	High side to Pin 8 (grid) 6SA7. Low side to chassis.	7.2MC	SW 1	"	"	A9	" " " "
7	400Ω	High side to ant. terminal. Low side to chassis.	2.5MC	"	2.5MC	"	A10	Rock tuning cap. and adjust for maximum output.
8	"	"	6.0MC	"	Tune for maximum output.	"	A11,A12	Adjust for maximum output
9	"	"	7.2MC	"	Tuning cap. fully open.	"	A9	Adjust for maximum output
10	400Ω	"	23.5MC	SW 2	"	"	A13	" " " "
11	400Ω	"	21MC	"	Tune for maximum output.	"	A14,A15	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		ESPEY PART No.	STANDARD REPLACEMENT		
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Phase Inverter	6J5	6J5	6Q	
6	Power Output	6V6GT	6V6GT	7AC	
7	Power Output	6V6GT	6V6GT	7AC	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

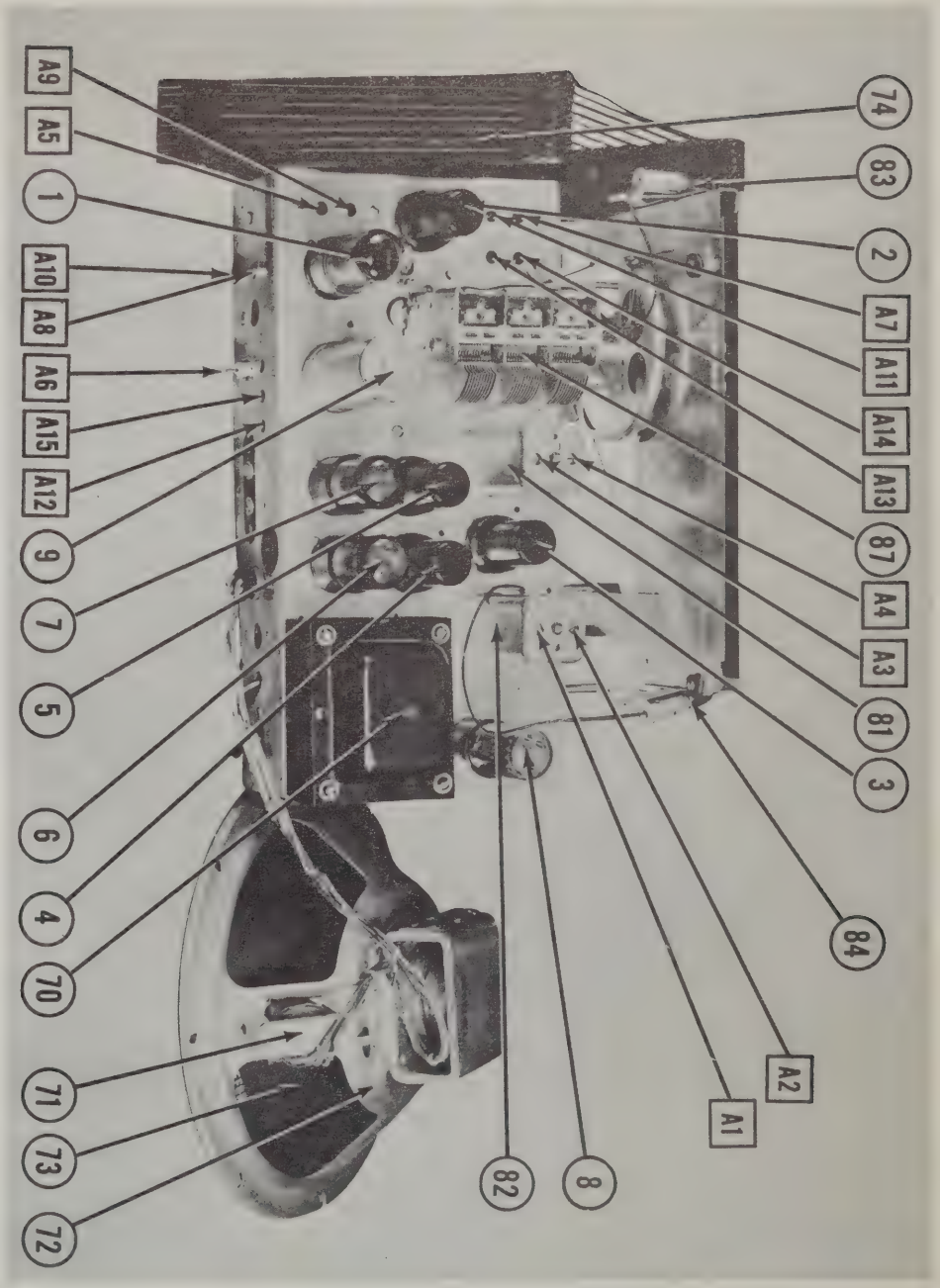
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ESPEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	
9A	40	450			UP9BJ39	FP238	DY-2x40-450	EL-240	■ Filter
B	40	450							▲ "
10	.05	400		484-05	DT4S5	TP426	S-4-05	TC-15	Line Bypass
11	.002	600		684-002	DT6D2	TP405	S-6-002	TC-12	Output Plate Bypass
12	.002	600		684-002	DT6D2	TP405	S-6-002	TC-12	" " "
13	.25	400		484-.25	DT4P25	TP430	S-4-25	TC-2	Plate Decoupling
14	.05	400		484-05	DT4S5	TP426	S-4-05	TC-15	Audio Coupling
15	.05	400		484-05	DT4S5	TP426	S-4-05	TC-15	" "
16	.02	400		484-02	DT4S2	TP423	S-4-02	TC-12	" "
17	.001	600		684-001	DT6D1	TP404	S-6-001	TC-21	Tone Compensation
18	.002	600		684-002	DT6D2	TP405	S-6-002	TC-22	" "
19	.005	400		484-005	DT6D4	TP408	S-6-005	TC-25	Audio Coupling
20	.001	600		684-001	DT6D1	TP404	S-6-001	TC-21	Tone Compensation
21	.01	200		484-01	DT4S1	TP421	S-4-01	TC-11	Audio Coupling
22	.05	400		484-05	DT4S5	TP426	S-4-05	TC-15	IF Screen Bypass
23	.03	400		484-03	DT4S3	TP424	S-4-03	TC-13	Plate Decoupling
24	.05	200		484-05	DT4S5	TP426	S-4-05	TC-15	IF Cath. Bypass
25	.01	400		484-01	DT4S1	TP421	S-4-01	TC-11	AVC Filter
26	.01	400		484-01	DT4S1	TP421	S-4-01	TC-11	Conv. Screen Bypass
27	.05	200		484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
28	.02	200		484-02	DT4S2	TP423	S-4-02	TC-12	Conv. Grid Filter
29	.01	400		484-01	DT4S1	TP421	S-4-01	TC-11	RF Screen Bypass
30	.03	400		484-03	DT4S3	TP424	S-4-03	TC-13	RF Cath. Bypass
31	.005	400		484-005	DT6D5	TP408	S-6-005	TC-25	Ext. Ant. Coupling
32	250	500		1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Audio Plate Bypass
33	6800	300							Tone Compensation
34	100	500		1468-0001	5W5T1	MC235	MO.5-31	1FM-31	" "
35	100	500		1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Osc. Grid Capacitor
36	500	500		1469-0005	5R5T5	MCB245	MOS.5-35	MS-35	Fixed Padder
37	4000	300		1467-004	1D5D4	MC463	MW.5-24	1FM-24	" "
38	3	500							RF Coupling
39	50	500		1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	RF Pri. Shunt
40	6800	300							RF Coupling

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	ESPEY PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
41A	500KΩ	1		TM233	D18-133X	T-88	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 41A per instructions
C	Switch			M26	41	SW-A	" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ESPEY PART No.	IRC PART No.	
42	100Ω	½		BTS-1000	Br.-Blk.-Red Antenna Loading
43	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. RF Grid
44	270Ω	½		BW-½-270	Red-Vi.-Br. RF Cathode
45	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn. Converter Grid - SW 2
46	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
47	8200Ω	½		BTS-8200	Gray-Red-Red Parasitic Suppressor
48	220KΩ	½		BTS-220K	Red-Red-Yl. AVC Network
49	22KΩ	2		BT-2-22K	Red-Red-Or. Converter Screen Dropping
50	270Ω	½		BW-½-270	Red-Vi.-Br. IF Cathode
51	22KΩ	1		BTA-22K	Red-Red-Or. Screen Dropping
52	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
53	150KΩ	½		BTS-150K	Br.-Grn.-Yl. Diode Load
54	330KΩ	½		BTS-330K	Or.-Or.-Yl. Diode Load
55	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Series Phono
56	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Phono Shunt
57	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue AF Grid
58	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
59	22KΩ	½		BTS-22K	Red-Red-Or. Tone Compensation
60	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Phase Inverter Grid
61	4700Ω	½		BTS-4700	Yl.-Vi.-Yl. Phase Inverter Cathode-See Note 1
62	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Phase Inverter Cathode
63	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Phase Inverter Plate Load
64	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
65	220KΩ	½		BTS-220K	Red-Red-Yl. " "
66	120Ω	2		BW-2-120	Br.-Red-Br. Output Cathode
67	4000Ω	5		AB-4000	Filter
68	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Filter
69	51Ω	½		BW-½-56	Grn.-Br.-Br. Parasitic Suppressor

Note - Some models use 3300Ω in this application. IRC replacement BTS-3300.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	ESPEY PART No.	STANCOR PART No.	THORDARSON PART No.	
70	117V AC @ .78A	640V CT @ .104A	5.1V AC @ 2.0A	6.5V AC @ 2.3A	T13370	P-6013*	T22R06	*Add resistor to reduce plate voltage.

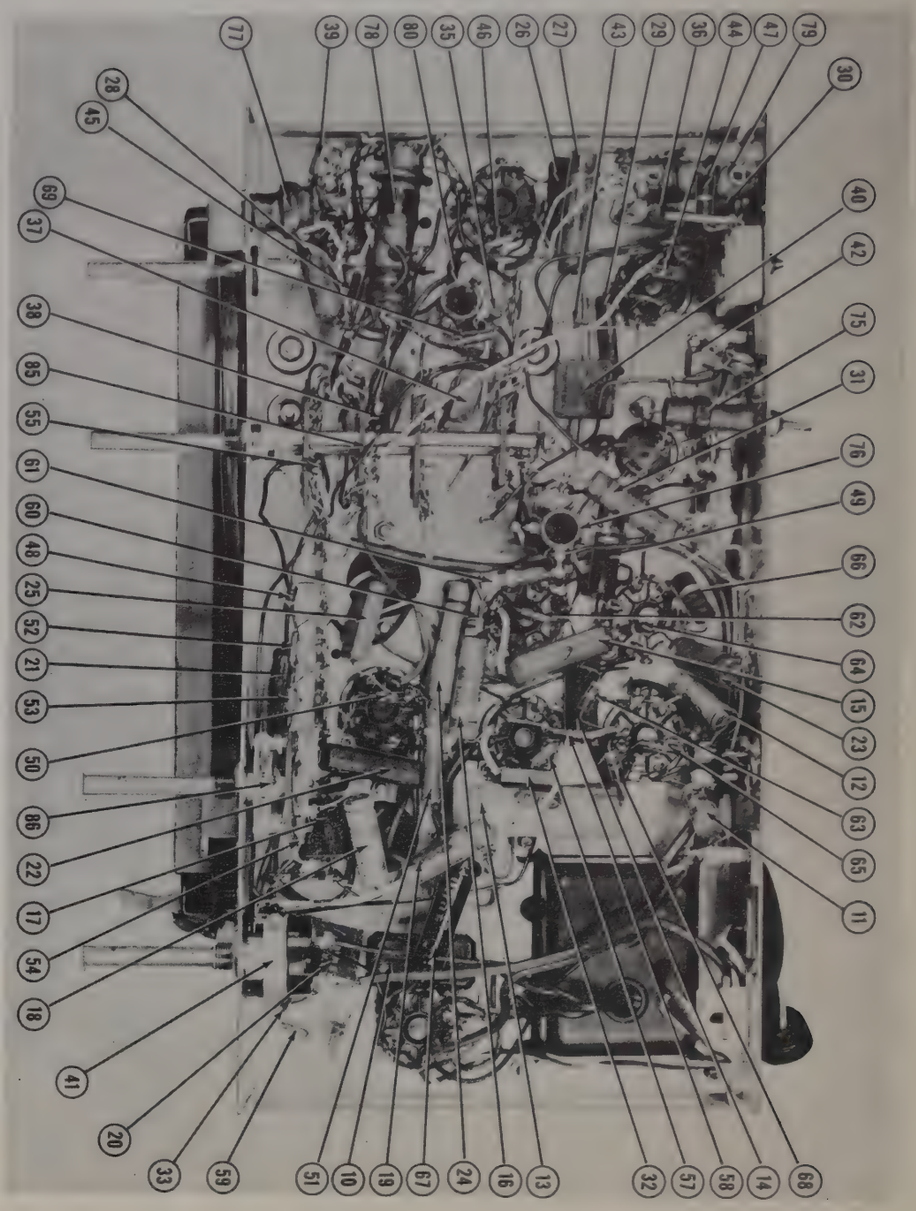
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ESPEY PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
71	13700Ω CT	3.8Ω	530Ω CT	.4Ω	Part of LS-13939	A-3823	T22S48		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ESPEY PART No.	JENSEN PART No.		
72	FIELD PM	VC IMP. 3.8Ω	LS-13939	ST-119† Mod. P10-T		†Replace output transformer to match 6Ω voice coil.
73	CONE DIA. 9½"	VC DIA. 1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

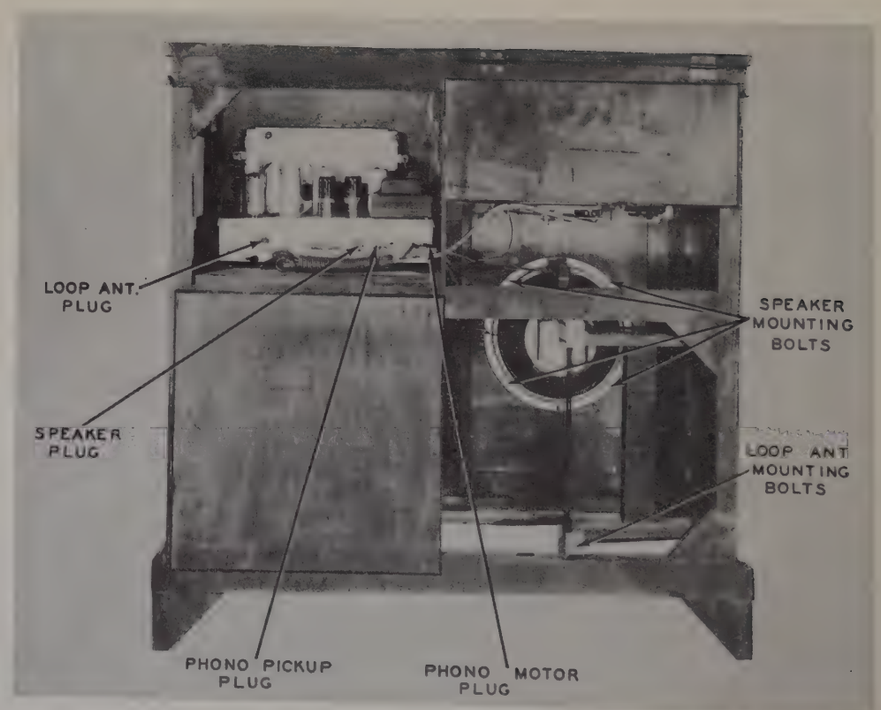
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ESPEY PART No.	MEISSNER PART No.	
74	Loop Ant.		.3Ω			
75	BC Ant.Load-ing Coil		2.3Ω			
76A	SW Ant.Coil (1)	1Ω	0Ω	L13373		
B	" " "(2)	0Ω	0Ω			76A & 76B wound on same form
77	BC RF Coil	130Ω	5Ω	L13744-A	14-1027	
78A	SW " " (1)	27Ω	.5Ω	L13375		
B	" " " (2)	7Ω	0Ω			78A & 78B " " " "
79A	BC Osc.Coil		7Ω	L13376		
B	SW " " (1)		2.5Ω			79A & 79B " " " "
80	SW " " (2)		0Ω	L13371	14-1046	
81	Input IF	25Ω	25Ω	Z13902	16-6658	
82	Output IF	13Ω		Z13903	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ESPEY PART No.		
83	Bayonet	6-8	0.15	Brown			Type 47
84	"	"	"	"			" "

MISCELLANEOUS

ITEM No.	PART NAME	ESPEY PART No.	NOTES
85	Switch		Band-Bass-Phono
86	Tone Switch		
87	3 Gang Var. Cap		15-479 MMF (each section)



DISASSEMBLY INSTRUCTIONS.

1. Remove four control knobs from front of cabinet.
2. Remove speaker plug from chassis.
3. Remove phono-motor plug from receptacle.
4. Remove phono-pickup plug from chassis.
5. Remove loop ant. plug from chassis.
6. Remove four chassis mounting bolts. Remove chassis.
7. Remove fourteen self-tapping screws holding bottom shield to chassis. Remove shield
8. Remove four hex nuts holding speaker. Remove speaker.
9. Remove two bolts holding loop antenna in brackets. Remove loop antenna.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

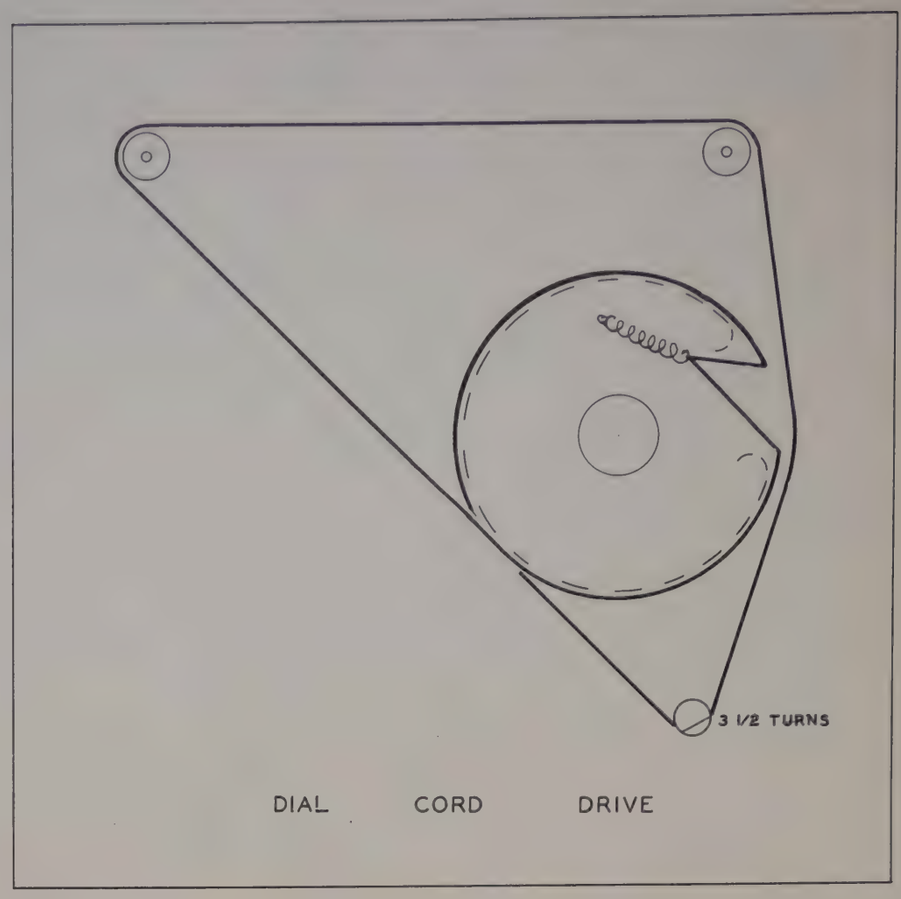
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0V.	0V.	2.8V.DC	-.1V.DC	2.8V.DC	113V.DC	6.5V.AC	212V.DC
2	6SA7	0V.	0V.	212V.DC	68V.DC	.3V.DC	0V.	6.5V.AC	3V.DC
3	6SK7	0V.	0V.	3.3V.DC	-.1V.DC	3.3V.DC	113V.DC	6.5V.AC	212V.DC
4	6SQ7	0V.	-45V.DC	0V.	-.1V.DC	-.35V.DC	68V.DC	6.5V.AC	0V.
5	6J5	0V.	0V.	130V.DC	12V.DC	12V.DC	43V.DC	6.5V.AC	47V.DC
6	6V6GT	0V.	0V.	328V.DC	212V.DC	0V.	162V.DC	6.5V.AC	9V.DC
7	6V6GT	0V.	0V.	328V.DC	212V.DC	0V.	68V.DC	6.5V.AC	9V.DC
8	5Y3GT/G	0V.	348V.DC	113V.AC	320V.AC	0V.	320V.AC	348V.DC	348V.DC

RESISTANCE READINGS

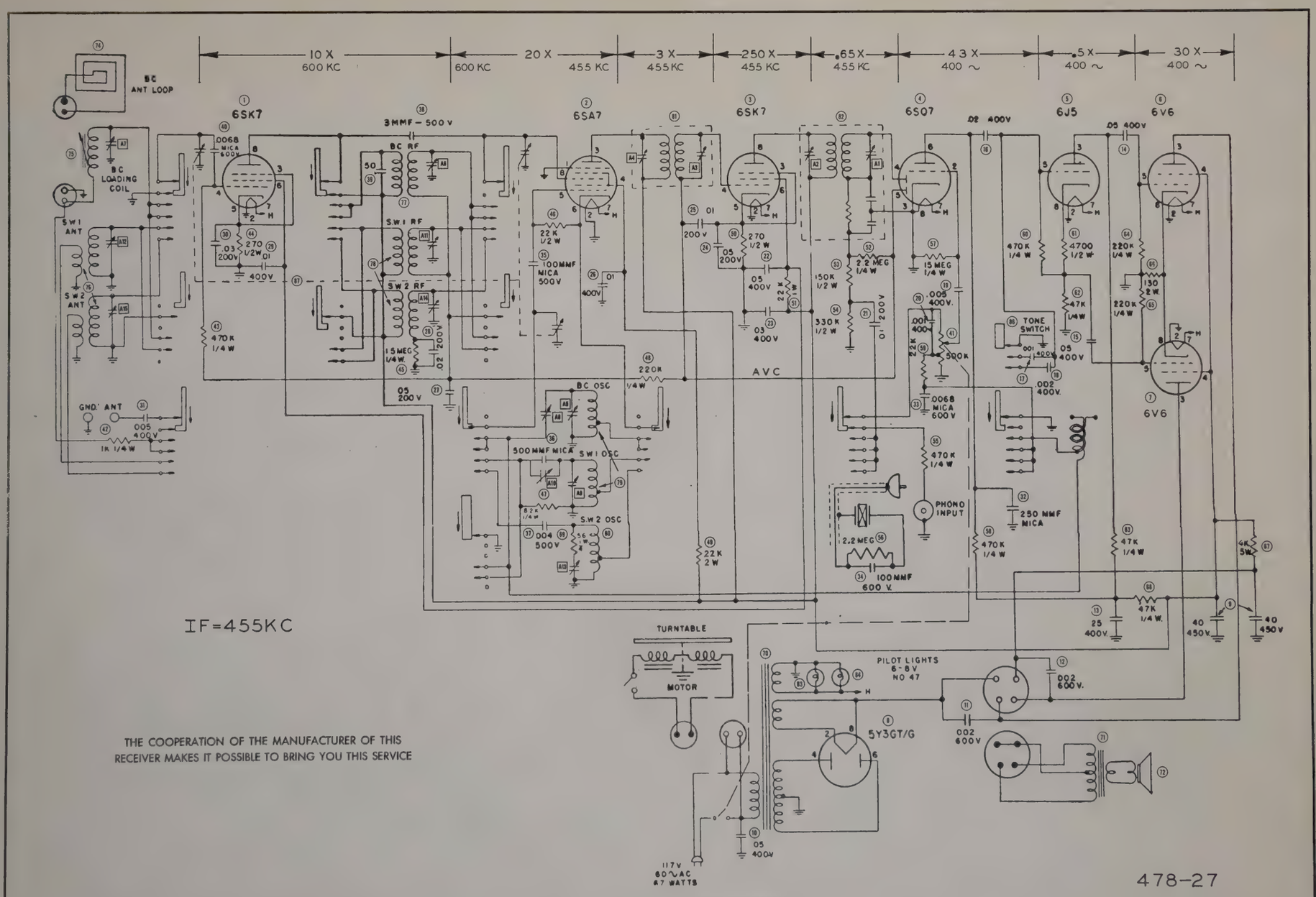
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0Ω	0Ω	250Ω	3 MEG.	250Ω	82KΩ	.1Ω	60KΩ
2	6SA7	0Ω	0Ω	60KΩ	93KΩ	20KΩ	5Ω	.1Ω	2.7MEG.
3	6SK7	0Ω	0Ω	270Ω	2.2MEG.	270Ω	82KΩ	.1Ω	60KΩ
4	6SQ7	0Ω	1.5MEG.	0Ω	2.2MEG.	500KΩ	580KΩ	.1Ω	0Ω
5	6J5	0Ω	0Ω	150KΩ	60KΩ	580KΩ	50KΩ	.1Ω	53KΩ
6	6V6GT	0Ω	0Ω	60KΩ	60KΩ	220KΩ	110KΩ	.1Ω	110KΩ
7	6V6GT	0Ω	0Ω	60KΩ	60KΩ	220KΩ	93KΩ	.1Ω	110KΩ
8	5Y3GT/G	0Ω	60KΩ	INF.	140Ω	INF.	130Ω	60KΩ	60KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



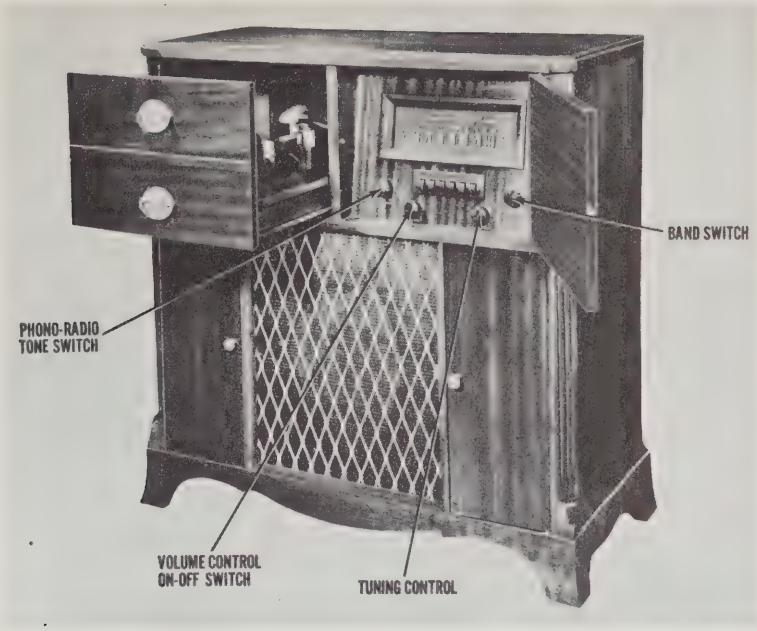
DIAL CORD DRIVE



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

478-27

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



STEWART-WARNER MODEL 72CR26

TRADE NAME	Stewart-Warner, Models 72CR16, 72CR26
MANUFACTURER	Stewart-Warner Corp., 1826 Diversey Pkwy., Chicago, Ill.
TYPE SET	AC Operated Phono - Radio Combination Superheterodyne with Loop Antenna & Pushbutton Tuning
TUBES (SEVEN)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC, 6SJ7 AF Amp., 6V6GT Power Output, 5Y3GT/G Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .540 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1725KC — **SHORT WAVE** 8.9 - 12.8MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Manual pushbutton should be depressed during alignment. To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	BC (counter-clockwise)	Tuning cap. open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	500MMFD.	Wind one turn of insulated wire around the loop frame. To one end of this wire fasten the brown wire which plugs into loop primary. The high side of signal generator goes to the other end of this insulated wire. Low side goes to chassis.	1500KC	"	1500KC	"	A5	" " " "
3	500MMFD.	"	"	"	Tune for maximum output.	"	A6, A7	" " " "
4	500MMFD.	"	600KC	"	"	"	A8	Rock tuning cap and adjust for maximum output. Repeat steps 2-4.
5	400Ω	"	12MC	SW (clockwise)	12MC	"	A9	Adjust for maximum output. Tune receiver to approx. 11.1 MC. If image does not appear reset dial to 12MC and open A9 to next peak and recheck for image.
6	400Ω	"	"	"	Tune for maximum output.	"	A10	Rock tuning cap. and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STEWART-WARNER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	2nd Det.-AVC	6SQ7	6SQ7	8Q	
5	AF Amp.	6SJ7	6SJ7	8N	
6	Power Output	6V6GT/G	6V6GT/G	7AC	
7	Rectifier	5Y3GT/G	5Y3GT/G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STEWART-WARNER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	20	400	502207	AF44J	UP6CJ13	FP339	DY-312	EL-312	■ Filter
B	10	400							▲ "
C	20	25		PRS25-25					Bias Filter
9	.006	600	502497	684-006	DT6D6	TP409	S-6-006	TC-26	Output Plate Bypass
10	.02	400	502152	484-02	DT4S2	TP423	S-4-02	TC-12	Audio Coupling
11	.05	400	502157	484-05	DT4S5	TP426	S-4-05	TC-15	Audio Plate Decoupling
12	.01	400	502151	484-01	DT4S1	TP421	S-4-01	TC-11	Tone Compensation
13	.25	400	502405	484-.25	DT4P25	TP430	S-4-25	TC-2	Feedback
14	.05	600	502154	684-05	DT6S5	TP415	S-6-05	TC-15	RF Bypass Pwr. Supp.
15	.004	600	502150	684-004	DT6D4	TP407	S-6-004	TC-24	Audio Coupling
16	.01	400	502151	484-01	DT4S1	TP421	S-4-01	TC-11	Tone Compensation
17	.05	600	502154	684-05	DT6S5	TP415	S-6-05	TC-15	Screen Bypass
18	.02	400	502152	484-02	DT4S2	TP412	S-4-02	TC-12	Osc. Feedback
19	.1	200	502155	484-.1	DT4P1	TP428	S-4-1	TC-1	RF Cath. Bypass
20	.05	200	502153	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
21	.05	200	502153	484-05	DT4S5	TP426	S-4-05	TC-15	" "
22	260	500	502271	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Audio Plate Bypass
23	110	500	502160	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	IF Bypass Diode
24	130	500	502201						Fixed Padder Cer.
25	39	500	502182						Fixed Trimmer Cer.
26	50	500	502159	1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	Osc. Grid Capacitor
27	2	500	502411						Neutralizing Cer.
28	10	500	502295	1468-00001	5W5Q1	MC215	MO.5-41	MS-41	RF Pri. Shunt Cer.
29	150	500	502202						Fixed Padder
30	270	500	502161						Fixed Trimmer PB
31	1000	500	502165	1468-001	1W5D1	MC455	MW.5-21	1FM-21	Osc. Feedback PB

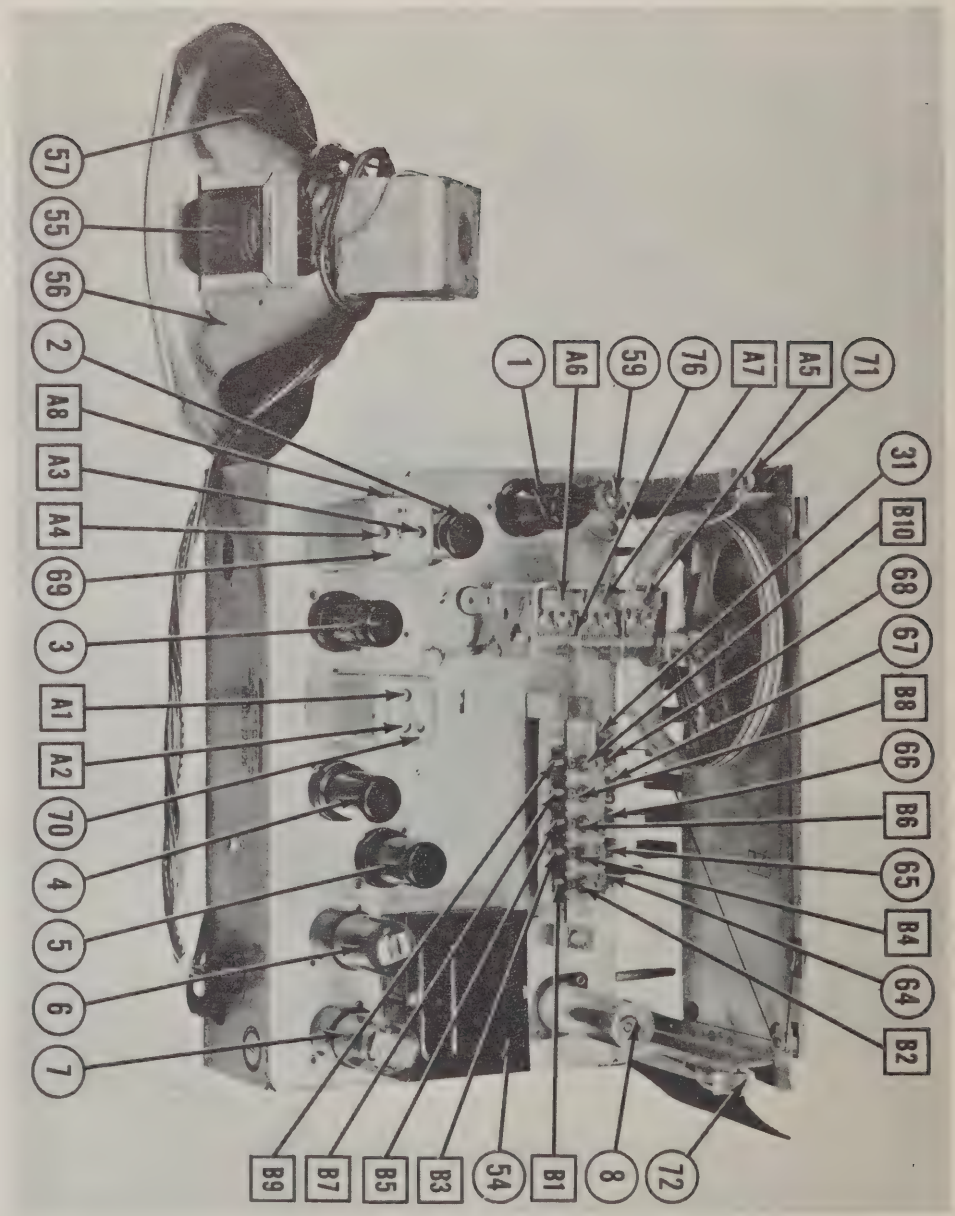
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEWART-WARNER PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
32A	500KΩ	1	502148	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 32A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEWART-WARNER PART No.	IRC PART No.	IDENTIFICATION CODES
33	4.7 Meg.	½	502468	BTS-4.7 Meg.	Yl.-Vl.-Grn. RF Grid
34	1000Ω	½	502478	BTS-1000	Br.-Blk.-Red RF Cathode
35	470KΩ	½	502134	BTS-470K	Yl.-Vl.-Yl. AVC Network
36	22KΩ	½	502130	BTS-22K	Red-Red-Or. Oscillator Grid
37	33KΩ	1	502466	BTA-33K	Or.-Or.-Or. Converter Screen Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STEWART-WARNER PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
38	2.2 Meg.	½	502135	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
39	68KΩ	1	502292	BTA-68K	Blue-Gray-Or. Screen Dropping
40	150Ω	1		BW-1-150	Br.-Grn.-Br. IF Cathode-See Note 1
41	100KΩ	½	502132	BTS-100K	Br.-Blk.-Yl. Series Phono
42	68KΩ	½	502408	BTS-68K	Blue-Gray-Or. Tone Compensation-See Note 2
43	47KΩ	½	502131	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
44	4.7 Meg.	½	502468	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
45	1500Ω	½	502406	BTS-1500	Br.-Grn.-Red AF Cathode
46	220KΩ	½	502133	BTS-220K	Red-Red-Yl. AF Plate Load
47	220KΩ	½	502133	BTS-220K	Red-Red-Yl. AF Plate Decoupling
48	2.2 Meg.	½	502135	BTS-2.2 Meg.	Red-Red-Grn. AF Screen Dropping
49	4.7 Meg.	½	502468	BTS-4.7 Meg.	Yl.-Vi.-Grn. Tone Compensation
50	47KΩ	½	502131	BTS-47K	Yl.-Vi.-Or. Tone Compensation-See Note 3
51	4700Ω	½	502291	BTS-4700	Yl.-Vi.-Red Tone Compensation
52	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. Output Grid
53	200Ω	2	502293	BW-2-220	Red-Blk.-Br. Bias

Note 1-Some models use 330Ω in this application. IRC replacement BW-½-330.
Note 2-Some models use 47KΩ in this application. IRC replacement BTS-47K.
Note 3-Some models use 68KΩ in this application. IRC replacement BTS-68K.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA STEWART-WARNER PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDARSON PART No.	INSTALLATION NOTES
54	117V AC @ .54A	600V CT @ .06A	5.0V AC @ 1.8A	6.3V AC @ 2.3A	502174	P-6120*	T22R02*	*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA STEWART WARNER PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.		INSTALLATION NOTES
55	5200Ω	3.6Ω	270Ω	.2Ω	502004	A-3870	T22S58		

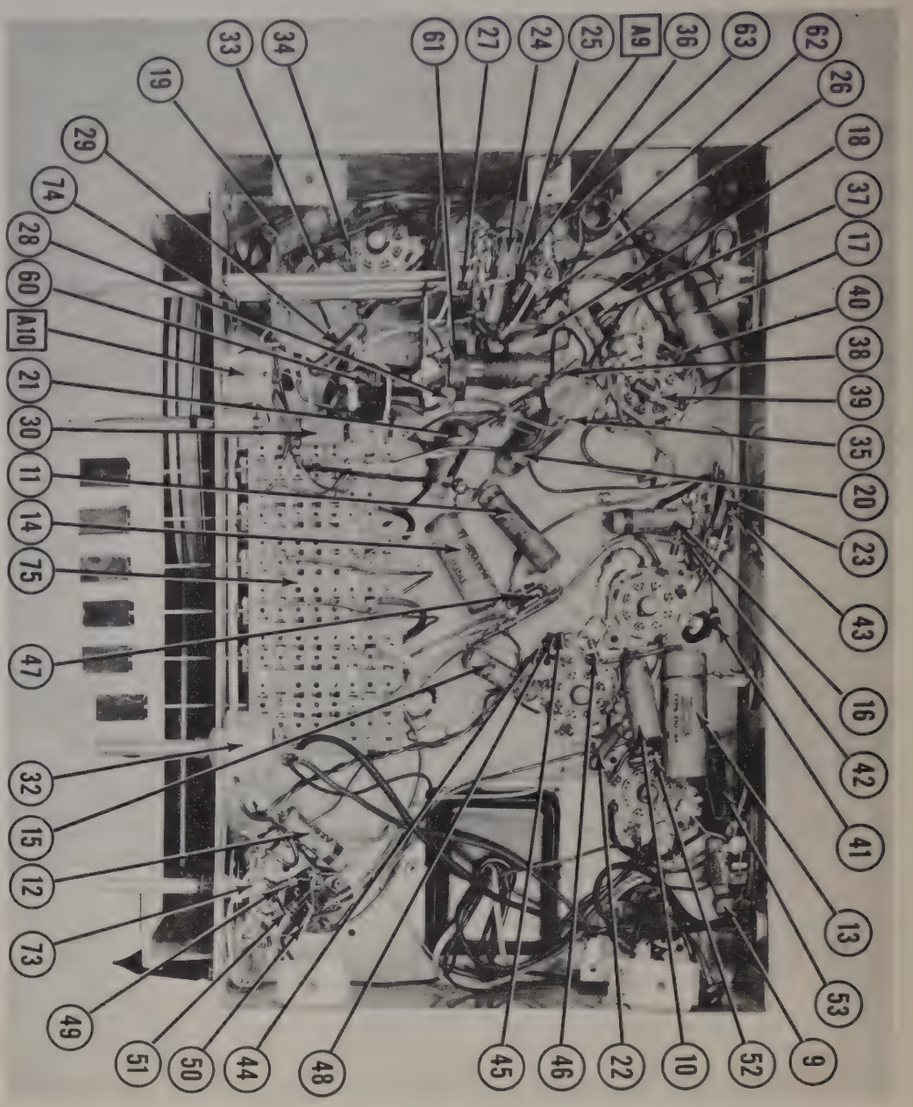
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA STEWART-WARNER PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.				
56A	1000Ω	3.6Ω	M502302			
	CONE DIA.	VC DIA.				
57A	9-3/8"	5/8"	502995			
56B			R502302			Alternate Speaker
57B			502304			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA STEWART-WARNER PART No.	REPLACEMENT DATA MEISSNER PART No.	
58	Loop Ant.		.1Ω	502282		
59	BC Ant.Coil	.5Ω	3Ω	502112		
60	SW " "	.5Ω	0Ω	502110	14-1044	
61	BC RF Coil	110Ω	5.5Ω	502113	14-1027	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

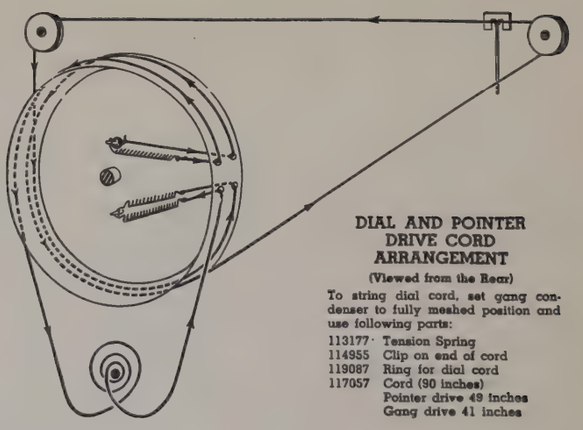
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA STEWART-WARNER PART No.	REPLACEMENT DATA MEISSNER PART No.	
62	BC Osc. Coil		5Ω	502114		
63	SW " "	.5Ω	0Ω	502111		
64	PB Osc.Coil		4Ω	502907		Items 64, 65, 66, 67 are part of pushbutton assembly #502025
65	" " "		2.8Ω	502908		
66	" " "		2.8Ω	502908		
67	" " "		2.4Ω	502909		
68	" " "		2.4Ω	502909		
69	Input IF	20Ω	20Ω	502102	16-6658	
70	Output IF	19Ω	19Ω	502103	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA STEWART-WARNER PART No.		INSTALLATION NOTES
71	Bayonet	6.3	0.25	Blue	110629		Type 44
72	"	"	"	" "	"		"

MISCELLANEOUS

ITEM No.	PART NAME	STEWART-WARNER PART No.	NOTES
73	Switch	502370	Radio-Phono-Tone
74	Bandswitch	502368	
75	Pushbutton Switch	502369	
76	3 Gang Var. Cap	502122	(15-480 MMF),(15-480 MMF), (13-176 MMF).
A10	Trimmer	502172	(25-100MMF) SW Ant. Adj.
	Pushbutton Trimmer Assy.	502910	
	Dial Scale	502227	Glass
	Pointer	502496	



DIAL AND POINTER DRIVE CORD ARRANGEMENT

(Viewed from the Rear)

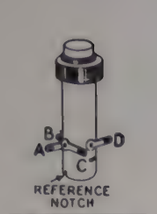
To string dial cord, set gang condenser to fully meshed position and use following parts:

113177 Tension Spring
114955 Clip on end of cord
119087 Ring for dial cord
117057 Cord (90 inches)
Pointer drive 49 inches
Gang drive 41 inches

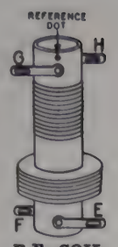
PUSHBUTTON ALIGNMENT

The frequency range of the buttons from right to left are 975-1600KC, 975-1600KC, 650-1300KC, 650-1300KC and 540-1000KC.
Make a list of five stations ranging from high to low frequency end of band making certain that each falls within the range of the button to be set up.

1. Turn receiver on and allow it to warm up for about 15 minutes.
2. Depress first button on right and tune in first station on list. Depress second button from right end and adjust B_1 to tune in station.
3. Adjust B_2 for maximum volume.
4. To set up the remaining buttons follow the same procedure as outlined above, adjusting B3, B5, B7 and B9 to tune in station, and B4, B6, B8 and B10 for maximum volume.



BC. ANTENNA COUPLING COIL 502112



R.F. COIL 502113

BC. OSCILLATOR COIL 502114

S.W. OSCILLATOR COIL 502111

S.W. ANTENNA COIL 502110

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	6SK7	0 V.	0 V.	0 V.	0 V.	4.1 V.DC	80 V.DC	6.3V.AC	245V.DC
2	6SA7	0 V.	0 V.	245V.DC	70 V.DC	-.8V.DC	0 V.	6.3V.AC	0 V.
3	6SK7	0 V.	0 V.	0 V.	0 V.	1.3V.DC	80 V.DC	6.3V.AC	245V.DC
4	6SQ7	0 V.	0 V.	0 V.	-.26V.DC	-.26V.DC	0 V.	6.3V.AC	0 V.
5	6SJ7	0 V.	6.3V.AC	.85V.DC	0 V.	.85V.DC	22V.DC	0 V.	44V. DC
6	6V6GT	0 V.	6.3V.AC	245V.DC	268V.DC	-2.2V.DC	-12V.DC	0 V.	0 V.
7	5Y3GT	0 V.	312V.DC	0 V.	300V.AC	0 V.	300V.AC	0 V.	312V.DC

RESISTANCE READINGS

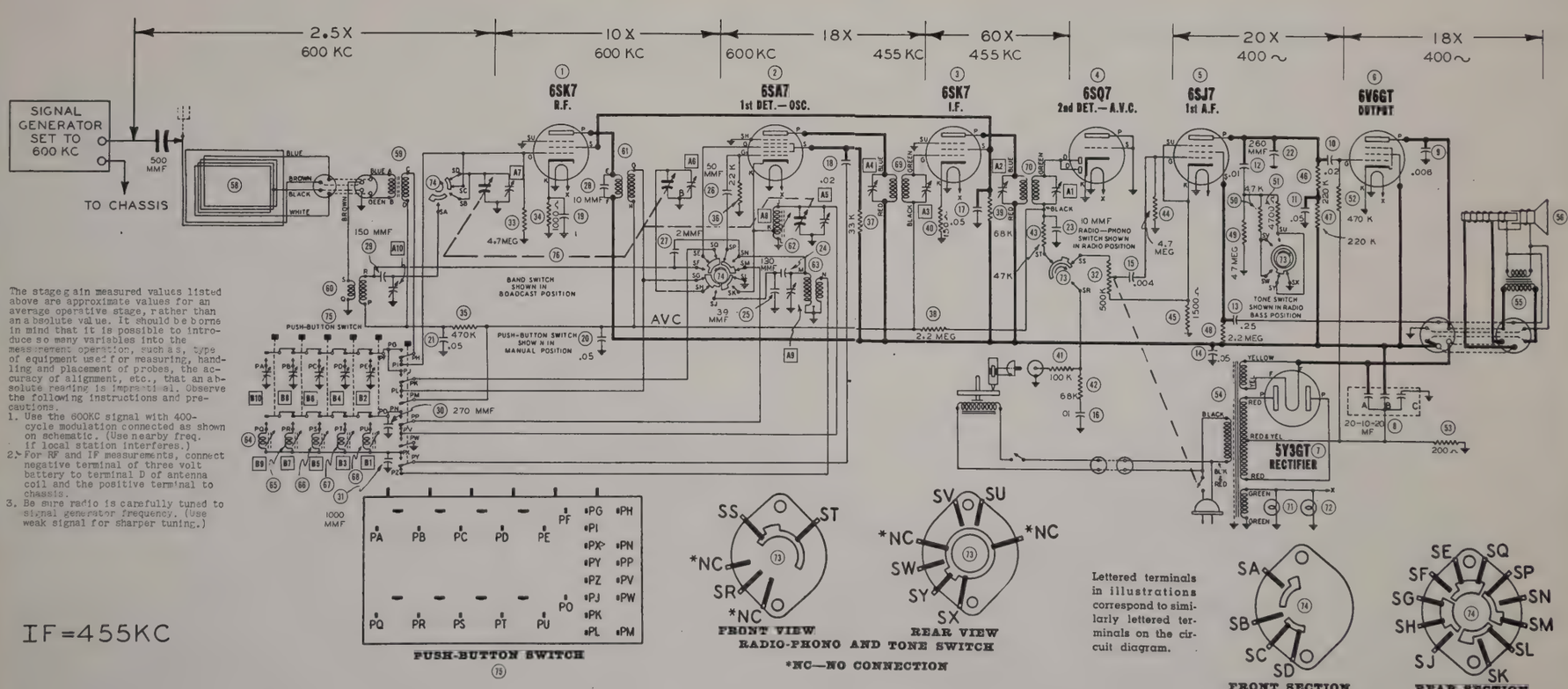
ITEM	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
1	6SK7	0 Ω	0 Ω	0 Ω	1.6MEG	800 Ω	1.5MEG	.1 Ω	1.3MEG
2	6SA7	0 Ω	0 Ω	1.3MEG	1.5MEG	22K Ω	.2 Ω	.1 Ω	1.6MEG
3	6SK7	0 Ω	0 Ω	0 Ω	1.6MEG	130 Ω	1.5MEG	.1 Ω	1.3MEG
4	6SQ7	0 Ω	0 Ω	0 Ω	460K Ω	460K Ω	0 Ω	.1 Ω	0 Ω
5	6SJ7	0 Ω	.1 Ω	1400 Ω	4 MEG	1400 Ω	3.5MEG	0 Ω	1.8MEG
6	6V6GT	0 Ω	.1 Ω	1.3MEG	1.3MEG	440K Ω	175 Ω	0 Ω	0 Ω
7	5Y3GT	INF.	1.3MEG	INF.	350 Ω	INF.	350 Ω	INF.	1.3MEG

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DISASSEMBLY INSTRUCTIONS

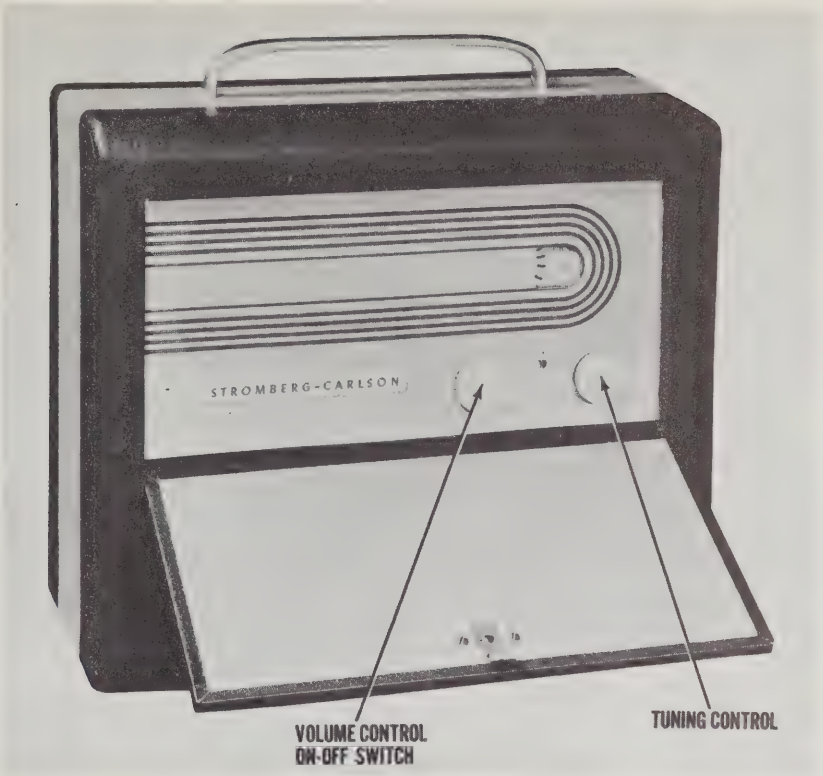
1. Remove four push-on type control knobs.
2. Remove speaker plug from chassis.
3. Remove phono-pickup plug from chassis.
4. Remove phono-motor plug from chassis.
5. Remove four hex head screws holding chassis to cabinet.
6. Remove plug to loop antenna.
7. Remove chassis.
8. Remove four hex nuts holding speaker to cabinet. Remove speaker.


2.5X 600 KC
10X 600 KC
18X 600 KC
18X 455 KC
60X 455 KC
20X 400 ~
18X 400 ~
1 6SK7 R.F.
2 6SA7 1st DET.— OSC.
3 6SK7 I.F.
4 6SQ7 2nd DET.— A.V.C.
5 6SJ7 1st A.F.
6 6V6GT OUTPUT
SIGNAL GENERATOR SET TO 600 KC
TO CHASSIS
500 MMF
BAND SWITCH SHOWN IN BOADCAST POSITION
PUSH-BUTTON SWITCH
PUSH-BUTTON SWITCH SHOWN IN MANUAL POSITION
AVC
10 MMF RADIO—PHONO SWITCH SHOWN IN RADIO POSITION
TONE SWITCH SHOWN IN RADIO BASS POSITION
5Y3GT RECTIFIER
20-10-20 MF
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. Observe the following instructions and precautions.
1. Use the 600KC signal with 400-cycle modulation connected as shown on schematic. (Use nearby freq. if local station interferes.)
2. For RF and IF measurements, connect negative terminal of three volt battery to terminal D of antenna coil and the positive terminal to chassis.
3. Be sure radio is carefully tuned to signal generator frequency. (Use weak signal for sharper tuning.)
IF=455KC
PUSH-BUTTON SWITCH
FRONT VIEW
REAR VIEW
RADIO-PHONO AND TONE SWITCH
*NC—NO CONNECTION
Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.
FRONT SECTION REAR VIEW
REAR SECTION REAR VIEW
BAND SWITCH

478-28

STROMBERG-CARLSON MODEL 1105 (SERIES 10-11) (BATTERY OPERATED)

STROMBERG-CARLSON MODEL 1105 (SERIES 10-11) (BATTERY OPERATED)



STROMBERG-CARLSON MODEL 1105 (SERIES 10-11) (BATTERY OPERATED)

STROMBERG-CARLSON MODEL 1105

TRADE NAME	Stromberg-Carlson, Model 1105 (Series 10-11)
MANUFACTURER	Stromberg-Carlson Co., 100 Carlson Rd., Rochester 3, N.Y.
TYPE SET	Three Power Portable Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types, 1LG5 RF Amp., 1LC6 Converter, 1LG5 IF Amp., 1LD5 Det.-AVC-AF, 3LF4 Power Output, 117Z6GT Rectifier.
POWER SUPPLY RATING	105-125 Volts AC-DC or 9 Volt "A" Battery & 90 Volt "B" Battery in Pack Form .220 Amp. @ 117 Volts AC or 52MA @ 8.9 Volts DC & 6.3MA @ 89 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial turn tuning cap fully closed. Loosen screw holding dial and set dial so that the two arrows, located at the extreme ends of the dial, are parallel with base of chassis. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a capacitor in series with the low side of the signal generator and B-. Connect loop to receiver through extended leads. Volume should be at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
	Loop	455KC	Tuning cap. open.	Across voice coil	A1,A2, A3,A4.	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
		1400KC	1400KC	"	A5	"
		"	Tune for maximum output.	"	A6,A7.	Adjust for maximum output. Check calibration at 600KC. If it is off, repeat last two steps until best results are obtained.

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PARTS LIST AND DESCRIPTIONS

STROMBERG-CARLSON
MODEL 1105 (SERIES 10-11)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STROMBERG-CARLSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1LG5	1LG5	7AD	
2	Converter	1LC6	1LC6	7AK	
3	IF Amp.	1LG5	1LG5	7AG	
4	Det.-AVC-AF	1LD5	1LD5	6AX	
5	Power Output	3LF4	3LF4	6BB	
6	Rectifier	117Z6GT	117Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STROMBERG-CARLSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	150	111008	AEF106D20A	UP9DJ48		DY-304	EL-351	● Filter
B	30	150							■ "
C	100	25			BRH251				▲ Fil. Bypass
D	100	25		PRS25-100	BRH251		M-100-25	UHC-102	" "
8	30	150	111013	PRS150-30	BR3015	TC47	M-30-150	UT-301	Filter
9	100	6	110010	PRS25-100	BRH601	TC2501	M-100-25	UHC-106	Filament Bypass
10	.005	600	27760	684-005	DT6D5	TP408	S-6-005	TC-25	Line Filter
11	.005	600	27760	684-005	DT6D5	TP408	S-6-005	TC-25	Output Plate Bypass
12	.005	600	27760	684-005	DT6D5	TP408	S-6-005	TC-25	Audio Coupling
13	.005	600	27760	684-005	DT6D5	TP408	S-6-005	TC-25	Audio Screen Bypass
14	.005	600	27760	684-005	DT6D5	TP408	S-6-005	TC-25	Audio Coupling
15	.25	200	110421	484-.25	DT4P25	TP430	S-4-25	TC-2	Filament Bypass
16	.005	600	27760	684-005	DT6D5	TP408	S-6-005	TC-25	AVC Filter
17	.005	600	27760	684-005	DT6D5	TP408	S-6-005	TC-25	Conv. Screen Bypass
18	.005	600	27760	684-005	DT6D5	TP408	S-6-005	TC-25	Osc. Anode Decoupling
19	.05	400	40632	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
20	.05	400	40632	484-05	DT4S5	TP426	S-4-05	TC-15	Line Isolation
21	.005	600	27760	684-005	DT6D5	TP408	S-6-005	TC-25	RF Coupling
22	100	500	34800	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Audio Plate Bypass

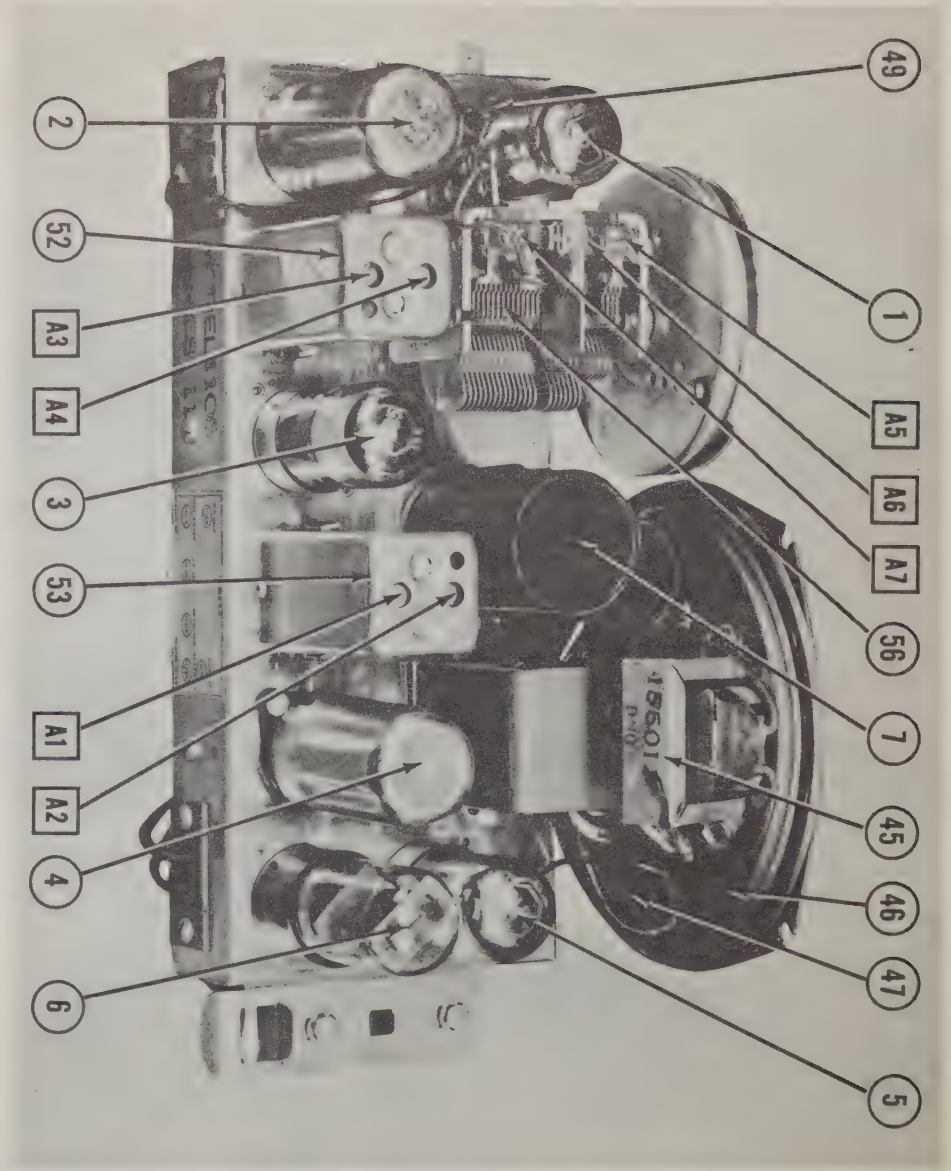
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STROMBERG-CARLSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	1 Meg.	1	145007	MR53	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 23A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STROMBERG-CARLSON PART No.	IRC PART No.	IDENTIFICATION CODES
24	2.2 Meg.	½	28195	BTS-2.2 Meg.	Red-Red-Grn. RF Grid
25	390Ω	½	28153	BW-½-390	Or.-White-Br. Filament String
26	47KΩ	½	28177	BTS-47K	Yl.-Vi.-Or. Converter Screen Dropping
27	220KΩ	½	28183	BTS-220K	Red-Red-Yl. Oscillator Grid
28	1 Meg.	½	28191	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
29	22KΩ	½	27407	BTS-22K	Red-Red-Or. Oscillator Anode Decoupling
30	2.2 Meg.	½	28195	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
31	2.2 Meg.	½	28195	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
32	2.2 Meg.	½	28195	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
33	10 Meg.	½	28203	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
34	5.6 Meg.	½	28200	BTS-5.6 Meg.	Grn.-Blue-Grn. AF Screen Dropping
35	1 Meg.	½	28191	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
36	1000Ω	½	28158	BTS-1000	Br.-Blk.-Red Filament String
37	2.2 Meg.	½	28195	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
38	1000Ω	½	28158	BTS-1000	Br.-Blk.-Red Filament String
39	470Ω	½	28154	BTS-470	Yl.-Vi.-Br. Filter
40	470Ω	½	28154	BTS-470	Yl.-Vi.-Br. "
41	1500Ω	10	149015	AB-1500	Filament String
42	1000Ω	1	45529	BTA-1000	Br.-Blk.-Red " "
43	68Ω	2	149206	BW-2-68	Blue-Gray-Blk. Rectifier Ballast
44	1 Meg.	½	28191	BTS-1 Meg.	Br.-Blk.-Grn. Line Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		STROMBERG-CARLSON PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
45	6600Ω	3.5Ω	370Ω	.7Ω	155011	A-3878	T22847		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			STROMBERG-CARLSON PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-105†		†Fabricate new mounting bracket.
46	PM	3.5Ω	155013	Mod. P5-X		
	CONE DIA.	VC DIA.				
47	5-1/8"	9/16"	155006			

R F COILS

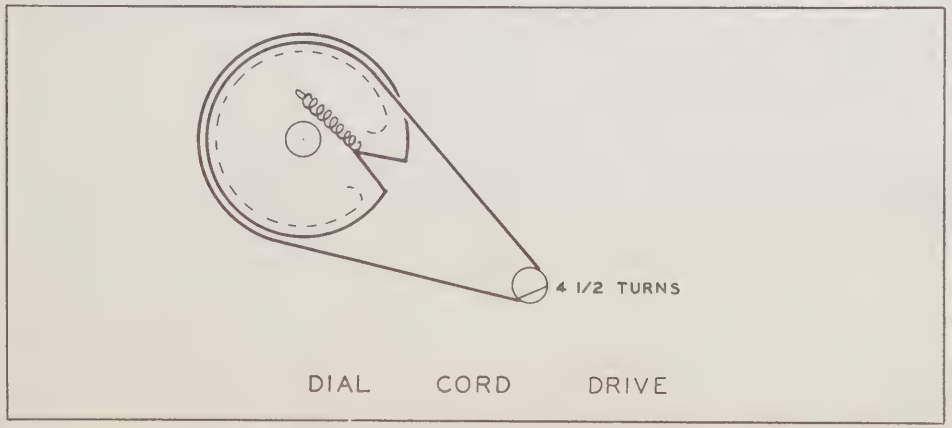
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	STROMBERG-CARLSON PART No.	MEISSNER PART No.	
48	Loop Ant.		.2Ω			
49	Ant. Coil		2.5Ω	114023		
50	RF Coil	90Ω	6Ω	114001		Supercedes Part No. 114025 (Series 10) Schematic wiring shows connections for new RF Coil
51	Osc. Coil	1.5Ω	11Ω	114024		
52	Input IF	14Ω	14Ω	114309	16-6658	
53	Output IF	14.5Ω		114310	16-6670	

BATTERIES

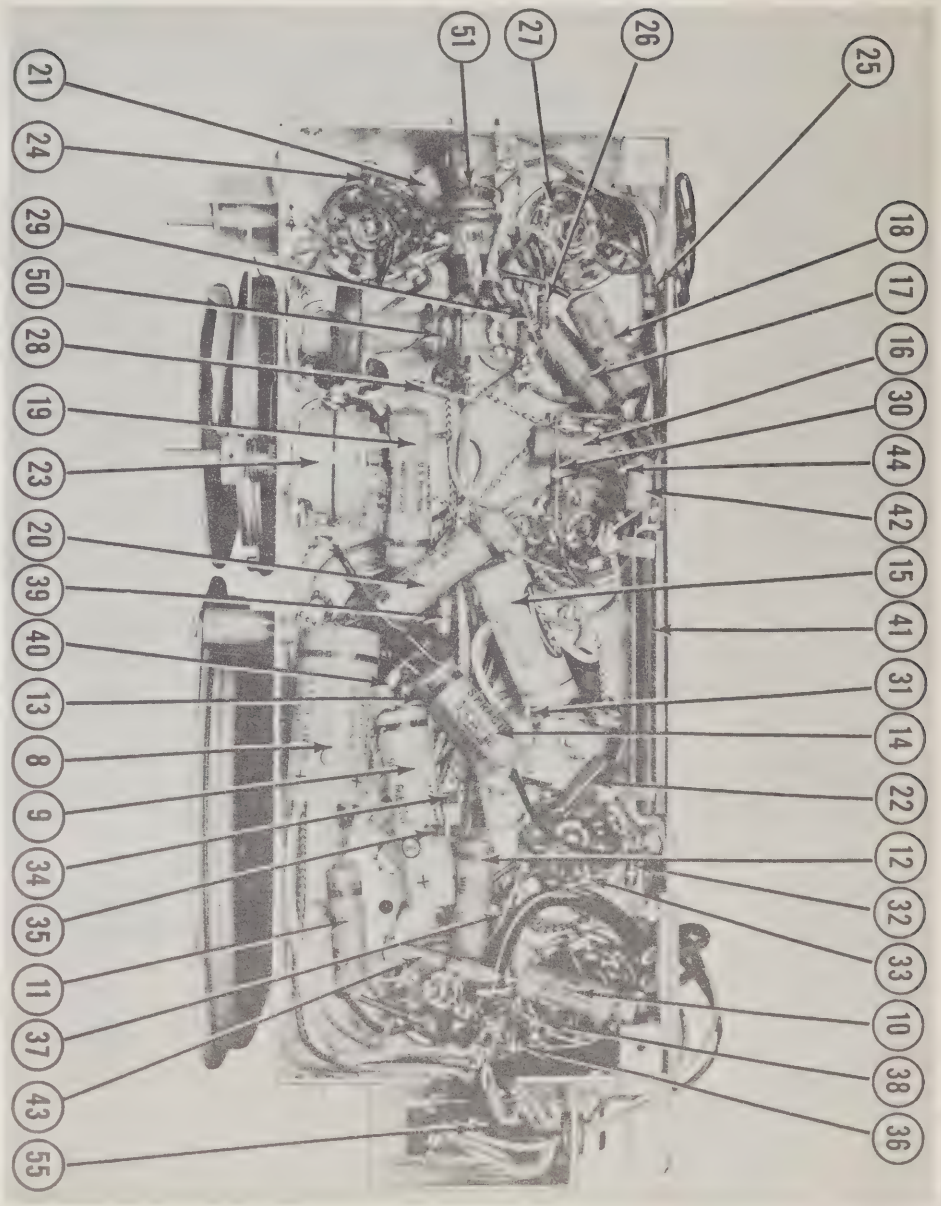
ITEM No.	VOLTAGE	STROMBERG-CARLSON PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
54	9V "A" 90V "B"	168004			No. 754	

MISCELLANEOUS

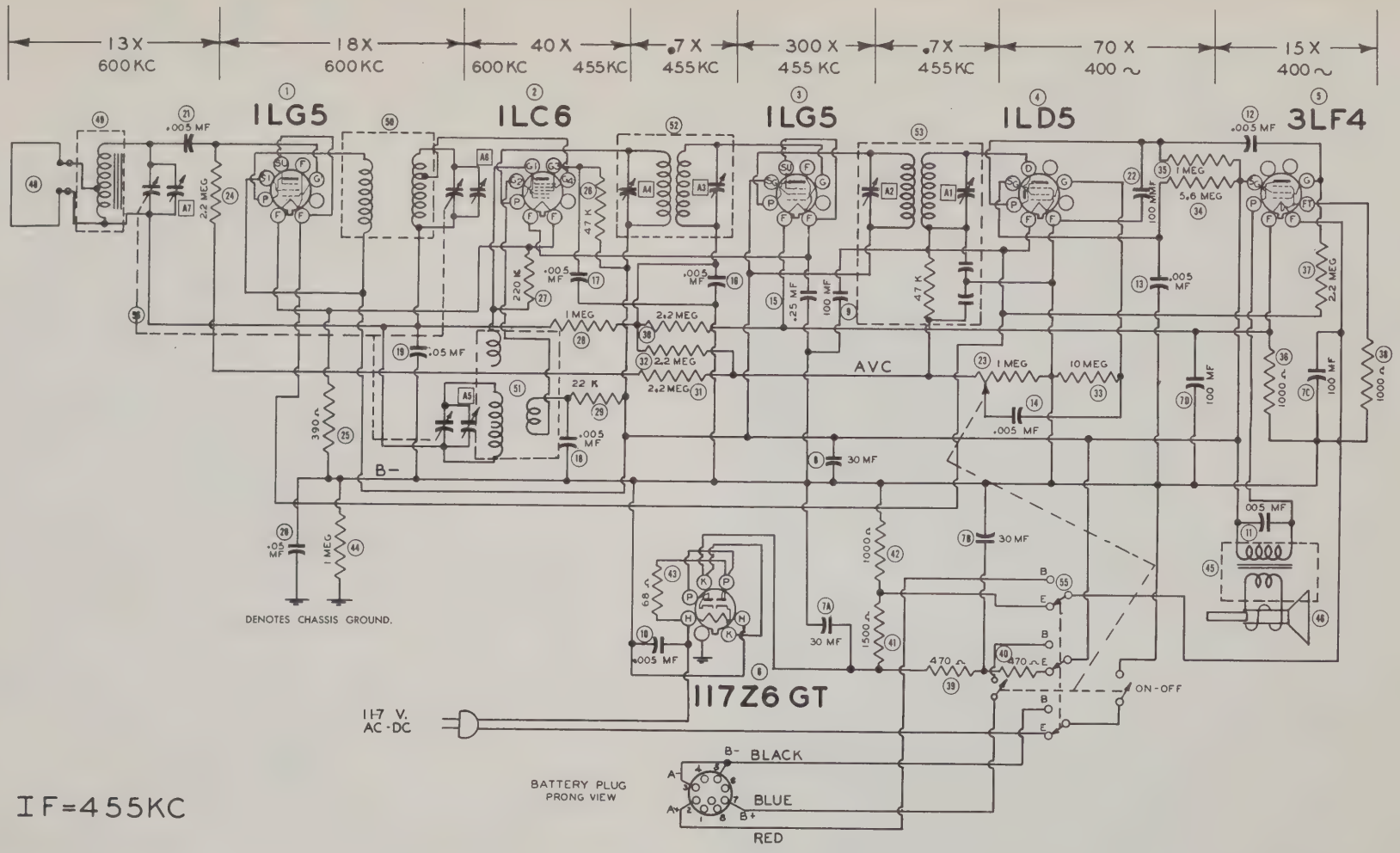
ITEM No.	PART NAME	STROMBERG-CARLSON PART No.	NOTES
55	Switch	158008	Power Change-Over
56	3 Gang Var. Cap.	110001	29-502MMF, 17-213MMF, 13-87MMF
	Dial Scale	122010	
	On-Off Indicator	144005	
	Dial Lens	138007	



CHASSIS—BOTTOM VIEW



STROMBERG-CARLSON MODEL 110S (SERIES 10-11)



IF=455KC

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

478-29

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LG5	3.2 V DC	86 V DC	87 V DC	1.7 V DC	1.7 V DC	0 V.	0 V.	1.7 V DC
2	1LC6	4.8 V DC	87 V DC	59 V DC	1.6 V DC	42 V DC	.1 V DC	0 V.	3.2 V DC
3	1LG5	6.1 V DC	86 V DC	87 V DC	4.8 V DC	4.8 V DC	.3 V DC	0 V.	4.8 V DC
4	1LD5	1.7 V DC	20 V DC	134 DC	0 V.	-.1 V DC	-.1 V DC	0 V.	0 V.
5	3LF4	6.1 V DC	92 V DC	102 V.	113 V AC	0 V.	1 V DC	7.6 V DC	9 V DC
6	117Z6GT	0 V.	117 V AC	113 V AC	108 V DC	113 V. A	0 V.	0 V.	108 V DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LG5	*	2500 Ω	2500 Ω	*	*	5 MEG.	2.4 MEG	*
2	1LC6	*	2500 Ω	22 KΩ	200 KΩ	48 KΩ	2.4 MEG.	INF.	*
3	1LG5	*	2500 Ω	2500 Ω	*	*	1.2 MEG.	INF.	*
4	1LD5	*	900 KΩ	5 MEG.	900 KΩ	850 KΩ	10 MEG.	2.8 MEG	*
5	3LF4	*	2200 Ω	2200 Ω	300 Ω	INF.	2 MEG.	*	*
6	117Z6GT	1 MEG.	230 Ω	250 Ω	1400 Ω	250 Ω	INF.	0 Ω	1400 Ω

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

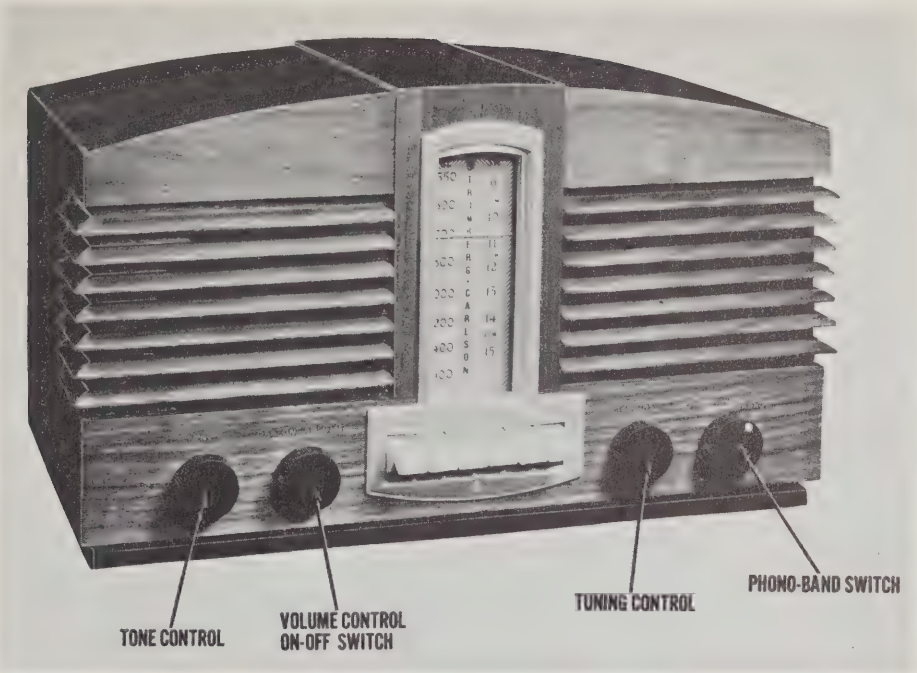
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. Connect jumper across two outside terminals of volume control during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

STROMBERG-CARLSON
MODELS 1110-HW, 1110-PTW (SERIES 10)



STROMBERG-CARLSON
MODELS 1110-HW, 1110-PTW (SERIES 10)

STROMBERG-CARLSON MODEL 1110-HW

TRADE NAME	Stromberg-Carlson, Models 1110-HW, 1110-PTW (Phonograph)
MANUFACTURER	Stromberg-Carlson Co., 100 Carlson Road, Rochester 3, N.Y.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne (Model 1110-HW Phono Provisions Only)
TUBES (SIX)	Types, 6SK7 RF Amp., 6SA7GT/G Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6K6GT Power Output, 6X5GT/G Rectifier.
POWER SUPPLY	105-125 Volts AC — RATING .440 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC — **SHORT WAVE** 8.7-15.5MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer in a horizontal position at the top of the number 55 at the low frequency end of the dial. Loop must be connected when RF alignment is made. Volume should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of center section of tuning cap. Low side to chassis.	455KC	BC	Tuning cap. open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	200 MMFD	High side to ant. terminal. Low side to chassis.	1400KC	"	1400KC	"	A5	" " " "
3	200 MMFD	"	"	"	Tune for maximum output.	"	A6,A7	" " " "
4	200 MMFD	"	600KC	"	600KC	"	A8	" " " "
5	200 MMFD	"	"	"	Tune for maximum output.	"	A9	" " " "
6	400Ω	"	14MC	SW	14MC	"	A10	Adjust for maximum output.
7	400Ω	"	"	"	Tune for maximum output.	"	A11,A12	Rock tuning cap. and adjust for maximum output. Repeat steps 6 and 7 until no further increase in output is obtained.

PUSHBUTTON ADJUSTMENTS

Make a list of stations to be set up. They may be in any order but the preferable arrangement is high to low frequency stations.

1. Turn set on and allow it to warm up for about 15 minutes.
2. Lift all the buttons and loosen the set screws for each button.
3. Manually tune in the first station. Holding the manual tuning control to keep the station from being detuned, push in completely the first button on the right.
4. Lift the button and tighten set screw firmly.
5. Check accuracy of setting by detuning with manual tuning control and retuning with pushbutton. If setting is off repeat steps 2-4.
6. To set up remaining pushbuttons follow same precedure as outlined above.

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PARTS LIST AND DESCRIPTIONS

STROMBERG-CARLSON
MODELS 1110-HW, 1110-PTW

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STROMBERG-CARLSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7GT/G	6SA7GT/G	8AD	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Power Output	6K6GT	6K6GT	7S	
6	Rectifier	6X5GT/G	6X5GT/G	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STROMBERG-CARLSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	10	350	111004	AEF64K4A	UP6CJ17	FP330	DY-312	EL-323	■ Filter
B	30	350							▲ "
C	20	25							Cath. Bypass
8	.01	600	25485	684-01	DT6S1	TP410	S-6-01	TC-11	Output Plate Bypass
9	.01	600	25485	684-01	DT6S1	TP410	S-6-01	TC-11	Audio Coupling
10	.01	600	25485	684-01	DT6S1	TP410	S-6-01	TC-11	Tone Compensation
11	.02	600	25484	684-02	DT6S2	TP412	S-6-02	TC-12	"
12	.005	600	27760	684-005	DT6D5	TP408	S-6-005	TC-25	Audio Coupling
13	.005	600	27760	684-005	DT6D5	TP408	S-6-005	TC-25	AVC Filter
14	.01	600	25485	684-01	DT6S1	TP410	S-6-01	TC-11	RF Coupling
15	.05	400	40632	484-05	DT4S5	TP426	S-4-05	TC-15	Screen Bypass
16	100	500	34800	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Audio Plate Bypass
17	250	500	25376	1468-00025	5W5T25	MC240	MO.5-325	1FM-325	Phono Tone Compensation
18	100	500	34800	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Osc. Grid Capacitor
19	2500	300	29559	1467-0025	1W5D25	MC460	MW.5-225	1FM-22	AVC Filter
20	2500	300	29559	1467-0025	1W5D25	MC460	MW.5-225	1FM-22	RF Coupling
21	30	500	34889		5W5Q3		MW.5-43	MS-43	Ext. Ant. Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STROMBERG-CARLSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	1 Meg.	1	145005	MRT443	D18-137XX*	T-112	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 22A per instructions
C	Switch		" "	M26	41	SW-A	" " " "
23A	2 Meg.	1	145004			M-61-S	Tone Control
B	Shaft		Not Req.			Not Req.	Attach to 23A per instructions

*Use 500KΩ tap only.

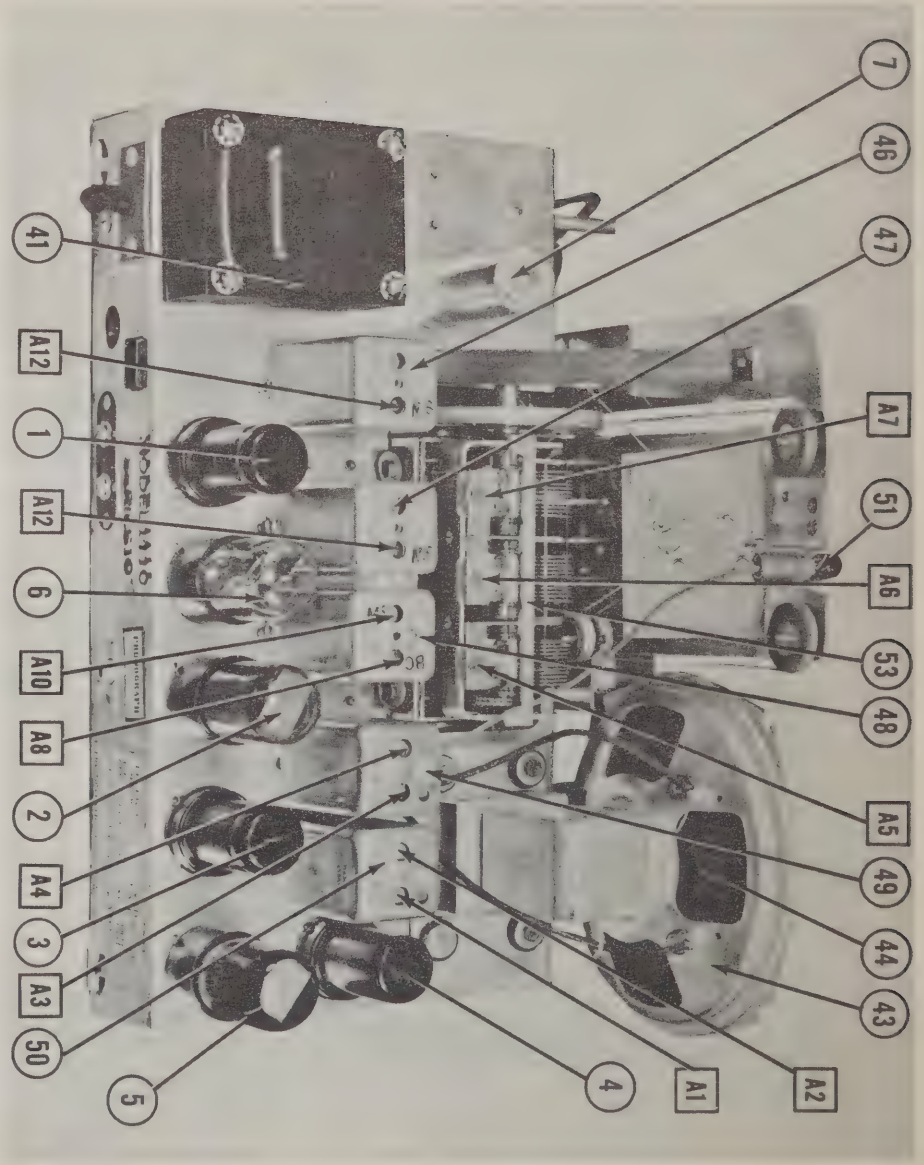
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STROMBERG-CARLSON PART No.	IRC PART No.	IDENTIFICATION CODES
24	2.2 Meg.	½	28195	BTS-2.2 Meg.	Red-Red-Grn. RF Grid
25	1 Meg.	½	28191	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
26	15KΩ	1	149186	BTA-15K	Br.-Grn.-Or. RF Plate Load
27	15KΩ	1	149186	BTA-15K	Br.-Grn.-Or. RF Plate Load
28	22KΩ	½	27407	BTS-22K	Red-Red-Or. Oscillator Grid
29	270KΩ	½	28184	BTS-270K	Red-Vi.-Yl. Series Phono
30	2.2 Meg.	½	28195	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
31	470KΩ	½	28187	BTS-470K	Yl.-Vi.-Yl. Diode Load
32	10 Meg.	½	28203	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
33	12KΩ	½	28171	BTS-12K	Br.-Red-Or. Tone Compensation
34	22KΩ	2	149011	BT-2-22K	Red-Red-Or. Screen Dropping
35	22KΩ	2	149011	BT-2-22K	Red-Red-Or. Screen Dropping
36	270KΩ	½	28184	BTS-270K	Red-Vi.-Yl. AF Plate Load
37	470KΩ	½	28187	BTS-470K	Yl.-Vi.-Yl. Output Grid
38	1 Meg.	½	28191	BTS-1 Meg.	Br.-Blk.-Grn. Feedback
39	680Ω	1	149174	BTA-680	Blue-Gray-Br. Output Cathode

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000~)	REPLACEMENT DATA: STROMBERG-CARLSON PART NO.	STANCOR PART NO.	THORDARSON PART NO.	INSTALLATION NOTES
40	.073A	190Ω	4 Henries	161001	C-1002 #	T22C53#	#Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	SEC. 3	STROMBERG-CARLSON PART No.	STANCOR PART No.	THORDARSON PART No.	
41	117V AC @ .44A	500V CT @ .073A	6.4V AC @ 2.5A		161402	P-6011†	T22R02	†Add resistor to reduce voltage

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		STROMBERG-CARLSON PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
42	6400Ω	3.5Ω	350Ω	.7Ω	161207	A-3878	T22S47		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			STROMBERG-CARLSON PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-105*		*Fabricate new mounting bracket.
43	PM	3.5Ω	155013	Mod. P5-W		
	CONE DIA.	VC DIA.				
44	5-1/8"	9/16"	155006			

R F COILS

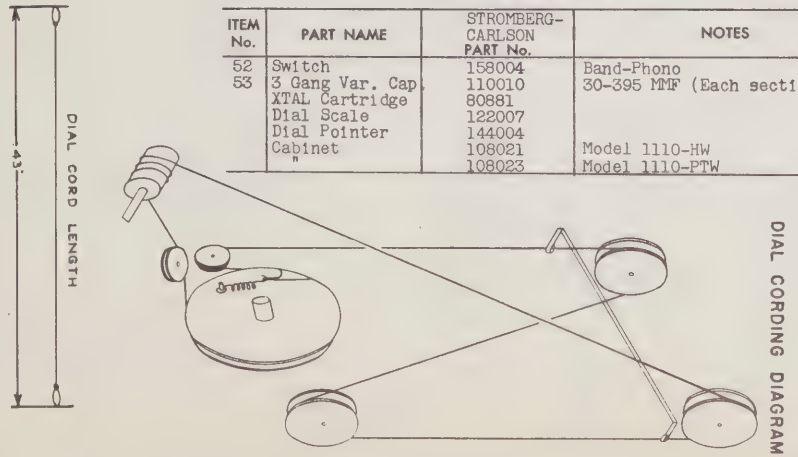
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	STROMBERG-CARLSON PART No.	MEISSNER PART No.	
45	Loop Ant.		0Ω			
46A	Ant. Coil		3.5Ω	114011		Items 46A & 46B are in same can.
B	" "		.1Ω			
47A	RF Coil		4.5Ω	114012		" 47A & 47B are in same can.
B	" "		.1Ω			
48A	Osc. Coil	.4Ω		114013		" 48A & 48B are in same can.
B	" "		.1Ω			
49	Input IF	14Ω	13.5Ω	114307	16-6658	
50	Output IF	14Ω		114308	16-6670	

DIAL LIGHT

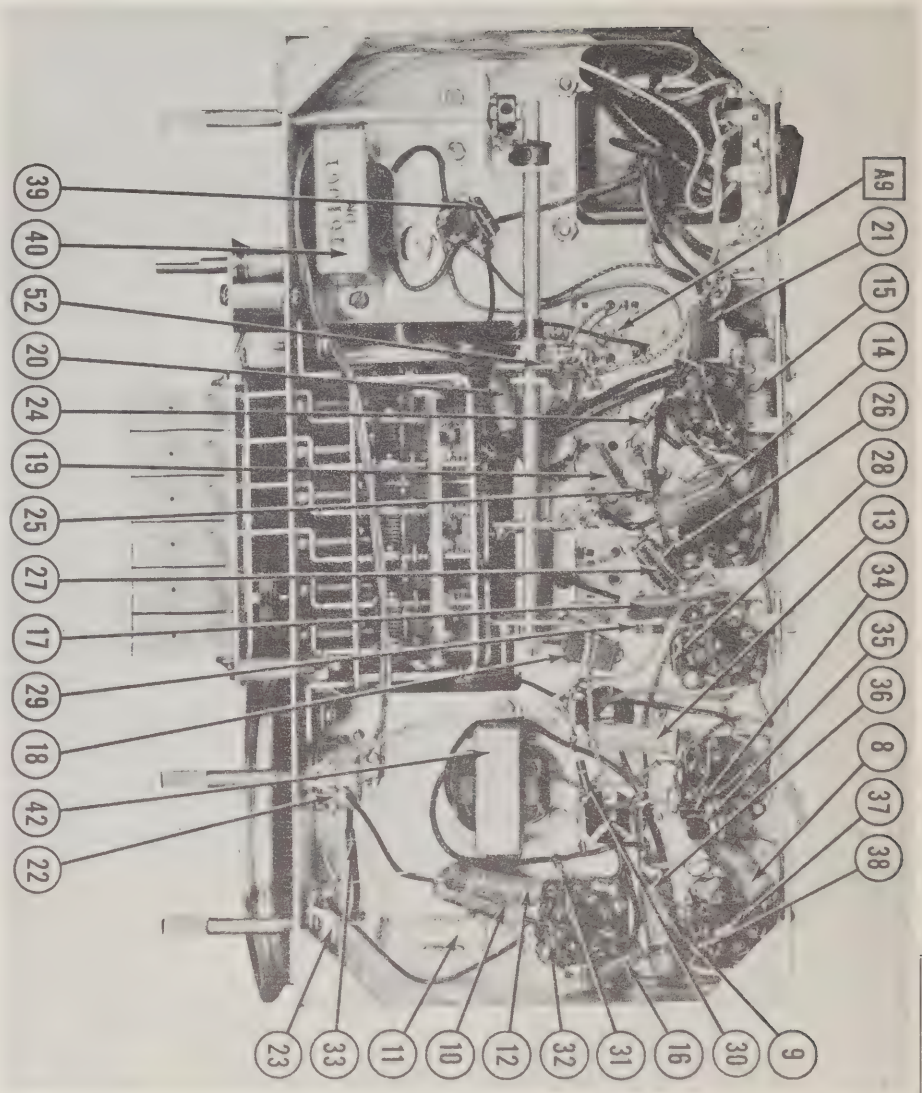
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					STROMBERG-CARLSON PART No.		
51	Bayonet	6-8	0.25	Blue	29956		Type 44

MISCELLANEOUS

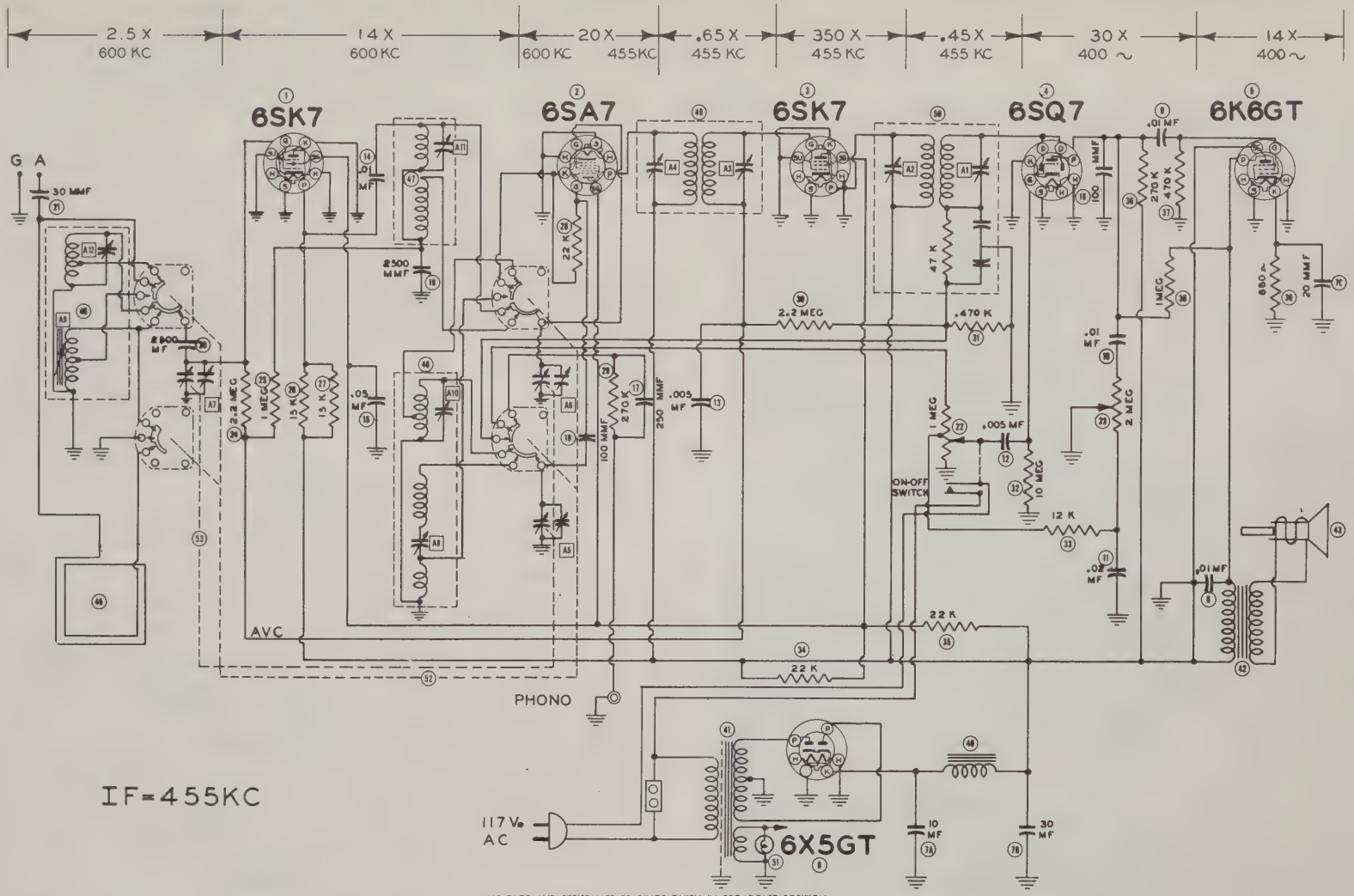
ITEM No.	PART NAME	STROMBERG-CARLSON PART No.	NOTES
52	Switch	158004	Band-Phono
53	3 Gang Var. Cap.	110010	30-395 MMF (Each section)
	XTAL Cartridge	80881	
	Dial Scale	122007	
	Dial Pointer	144004	
	Cabinet	108021	Model 1110-HW
	"	108023	Model 1110-PTW



CHASSIS—BOTTOM VIEW



STROMBERG-CARLSON
MODELS 1110-HW, 1110-PTW



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0 V.	6.4 V.AC	0 V.	-45 V.DC	0 V.	87 V.DC	0 V.	165 V.DC
2	6SA7GT	0 V.	6.4 V.AC	268 V.DC	87 V.DC	-6.7 V.DC	0 V.	0 V.	-.17 V.DC
3	6SK7	0 V.	6.4 V.AC	0 V.	-28 V.DC	0 V.	87 V.DC	0 V.	268 V.DC
4	6SQ7	0 V.	-25 V.DC	0 V.	-28 V.DC	-28 V.DC	117 V.DC	0 V.	6.4 V.AC
5	6K6GT	0 V.	6.4 V.AC	260 V.DC	268 V.DC	0 V.	117 V.DC	0 V.	2 V.DC
6	6X5GT	0 V.	6.4 V.AC	250 V.AC	268 V.DC	250 V.AC	165 V.DC	0 V.	280 V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0 Ω	.1 Ω	0 Ω	4.2 MEG	0 Ω	65 KΩ	0 Ω	58 KΩ
2	6SA7GT	0 Ω	.1 Ω	50 KΩ	65 KΩ	20 KΩ	.5 Ω	0 Ω	3 MEG
3	6SK7	0 Ω	.1 Ω	0 Ω	2.2 MEG	0 Ω	65 KΩ	0 Ω	50 KΩ
4	6SQ7	0 Ω	10 MEG	0 Ω	320 KΩ	320 KΩ	290 KΩ	0 Ω	.1 Ω
5	6K6GT	0 Ω	.1 Ω	50 KΩ	50 KΩ	440 KΩ	290 KΩ	0 Ω	700 Ω
6	6X5GT	0 Ω	.1 Ω	160 Ω	50 KΩ	180 Ω	60 KΩ	0 Ω	50 KΩ

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS 478-30

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TEMPLE
MODEL G-516

TEMPLE
MODEL G-516

TEMPLE MODEL G-516

TRADE NAME	Temple, Model G-516
MANUFACTURER	Templetone Radio Mfg. Corp., Garfield Ave., New London, Conn.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 12SA7GT/G Converter, 12SK7 IF Amp., 12SQ7GT/G Det.-AVC-AF, 50L6GT Power Output, 35Z5GT/G Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1620KC RATING .240 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap. fully closed and set pointer to 1st reference mark at lower left end of dial backplate. Use isolation transformer if available. If not, connect a capacitor in series with low side of signal generator and chassis. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume should be at maximum, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01 MFD	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
	Loop	1700KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
	"	1500KC	Tune for maximum output.	"	A6	"

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove phono-motor plug from chassis.
3. Remove phono pick-up plug from chassis.
4. Remove two staples holding loop antenna to cabinet.
5. Remove four Phillips head screws holding chassis mounting board. Remove chassis on mounting board.
6. Remove three self-tapping screws holding chassis to mounting board. Remove mounting board.

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PARTS LIST AND DESCRIPTIONS

TEMPLE MODEL G-516

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TEMPLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT/G	12SA7GT/G	8AD	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7GT/G	12SQ7GT/G	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT/G	35Z5GT/G	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TEMPLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	80	150			UP84215		DY-804020-150	■ EL-340	■ Filter
B	40	150						▲ "	▲ "
C	20	150						UT-201	Cath. Bias Filter
7	.1	600		684-.1	DT6P1	TP428	S-6-1	TC-1	Line Filter
8	.01	400		484-01	DT4S1	TP421	S-4-01	TC-11	Output Plate Bypass
9	.005	600		684-005	DT6D5	TP408	S-6-005	TC-25	Audio Coupling
10	.005	600		684-005	DT6D5	TP408	S-6-005	TC-25	Tone Compensation
11	.005	600		684-005	DT6D5	TP408	S-6-005	TC-25	Audio Coupling
12	.05	600		684-05	DT6S5	TP426	S-6-05	TC-15	IF Cath. Bypass
13	.1	400		484-.1	DT4P1	TP428	S-4-1	TC-1	AVC Filter
14	.1	400		484-.1	DT4P1	TP428	S-4-1	TC-1	RF Bypass Pwr. Supp.
15	.1	400		484-.1	DT4P1	TP428	S-4-1	TC-1	Phono Isolation
16	.005	600		684-005	DT6D5	TP408	S-6-005	TC-25	Ext. Ant. Coupling
17	.003	600		684-003	DT6D3	TP406	S-6-003	TC-23	Tone Compensation *
18	100	500		1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Audio Plate Bypass
19	100	500		1468-0001	5W5T1	MC235	MO.5-31	1FM-31	Osc. Grid Capacitor
20	10	500		1468-00001	5W5Q1	MC215	MO.5-41	1FM-41	Fixed Trimmer

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TEMPLE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	1	RP5-2	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 21A per instructions
C	Switch		" "	M26	41	SW-A	" " " "
22A	500KΩ	1	RP6-504B	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 22A per instructions

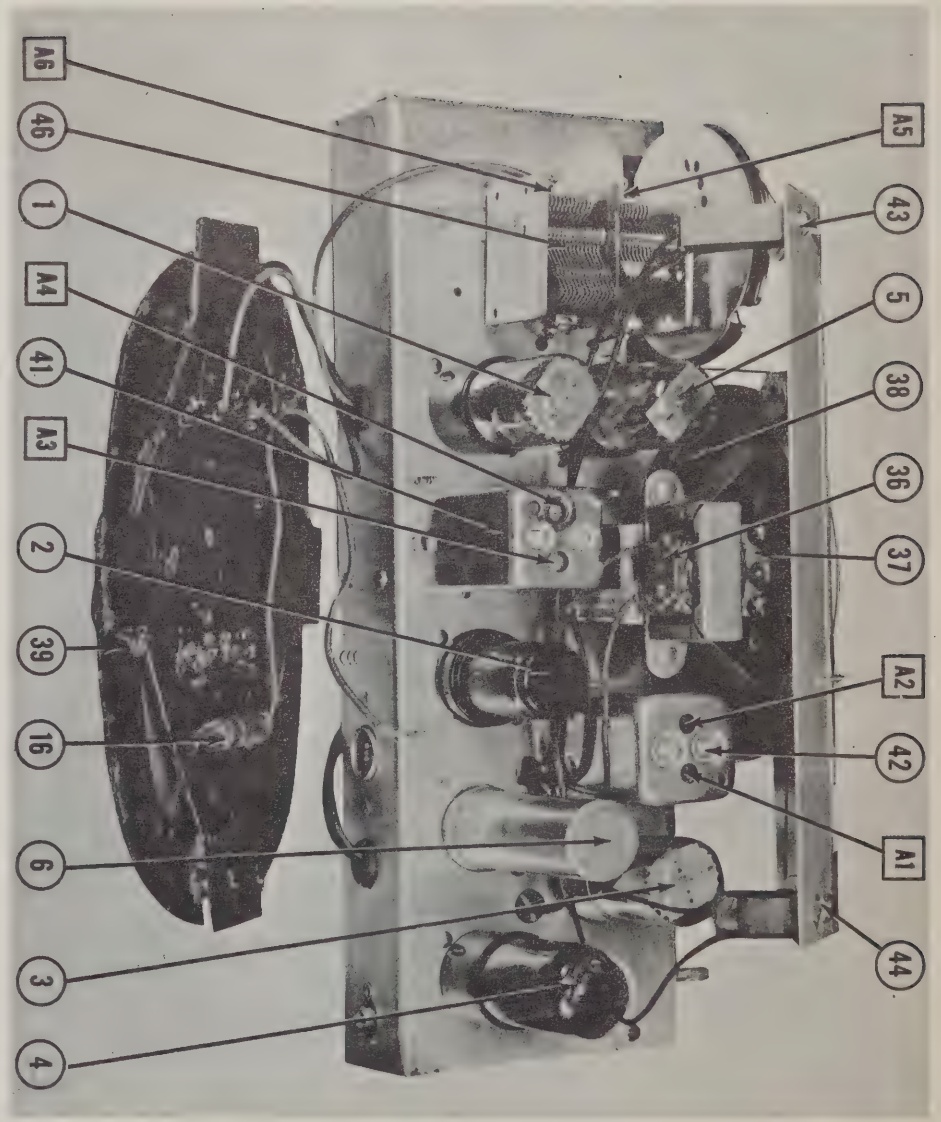
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TEMPLE PART No.	IRC PART No.	IDENTIFICATION CODES
23	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
24	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
25	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. AF Grid
26	330KΩ	½		BTS-330K	Or.-Or.-Yl. AF Plate Load
27	470KΩ	½		BTS-470K	Yl.-Vl.-Yl. Output Grid
28	33Ω	1		BW-1-33	Or.-Or.-Blk. Output Cathode
29	120Ω	1		BW-1-120	Br.-Red-Br. Output Cathode
30	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter
31	100Ω	1		BW-1-100	Br.-Blk.-Br. Surge Limiter
32	150Ω	½		BW-½-150	Br.-Grn.-Br. Pilot Light Shunt
33	470KΩ	½		BTS-470K	Yl.-Vl.-Yl. Phono Shunt
34	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Series Phono
35	33KΩ	½		BTS-33K	Or.-Or.-Or. Tone Compensation

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TEMPLE PART No.	STANCOR PART No.	THORDAR'N PART No.		INSTALLATION NOTES
36	2100Ω	3.3Ω	150Ω	.55Ω	Part of EH19	A-3876	T22S45		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: TEMPLE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA	INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
37	PM	3.3Ω	EH19	Mod.P5-X		
	CONE DIA.	VC DIA.				
38	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

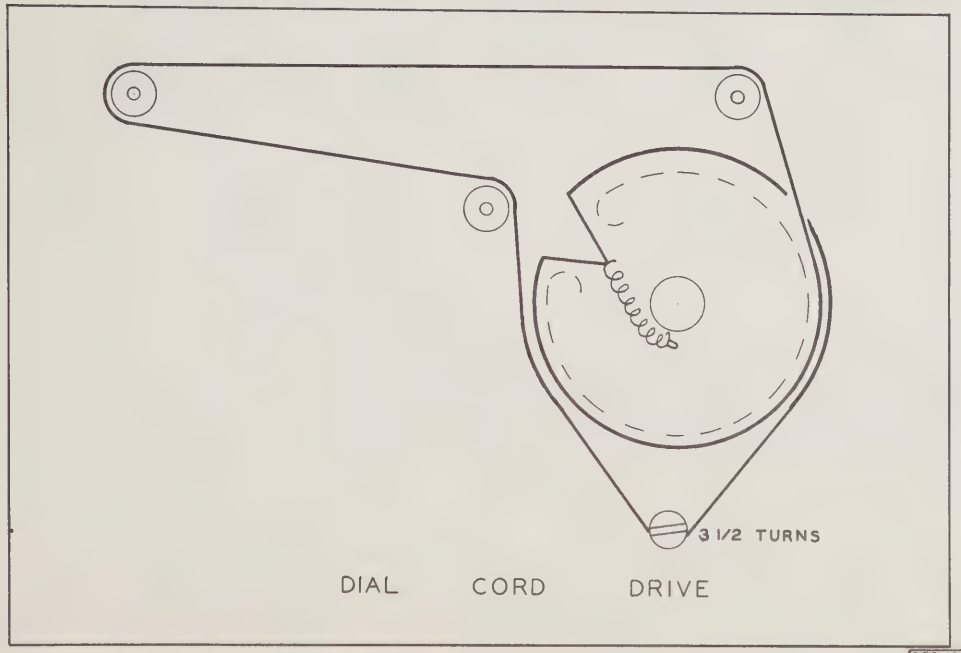
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: TEMPLE PART No.	REPLACEMENT DATA: MEISSNER PART No.
39	Loop Ant.	.2Ω	1.5Ω	LL7	
40	Osc. Coil		6.8Ω	LO2	14-1040
41	Input IF	14.5Ω	16Ω	TM2-10	16-6658
42	Output IF	15.5Ω		TM2-11	16-6660

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: TEMPLE PART No.	REPLACEMENT DATA	INSTALLATION NOTES
43	Bayonet	2.9	.17	White			Type 291
44	"	"	"	"			"

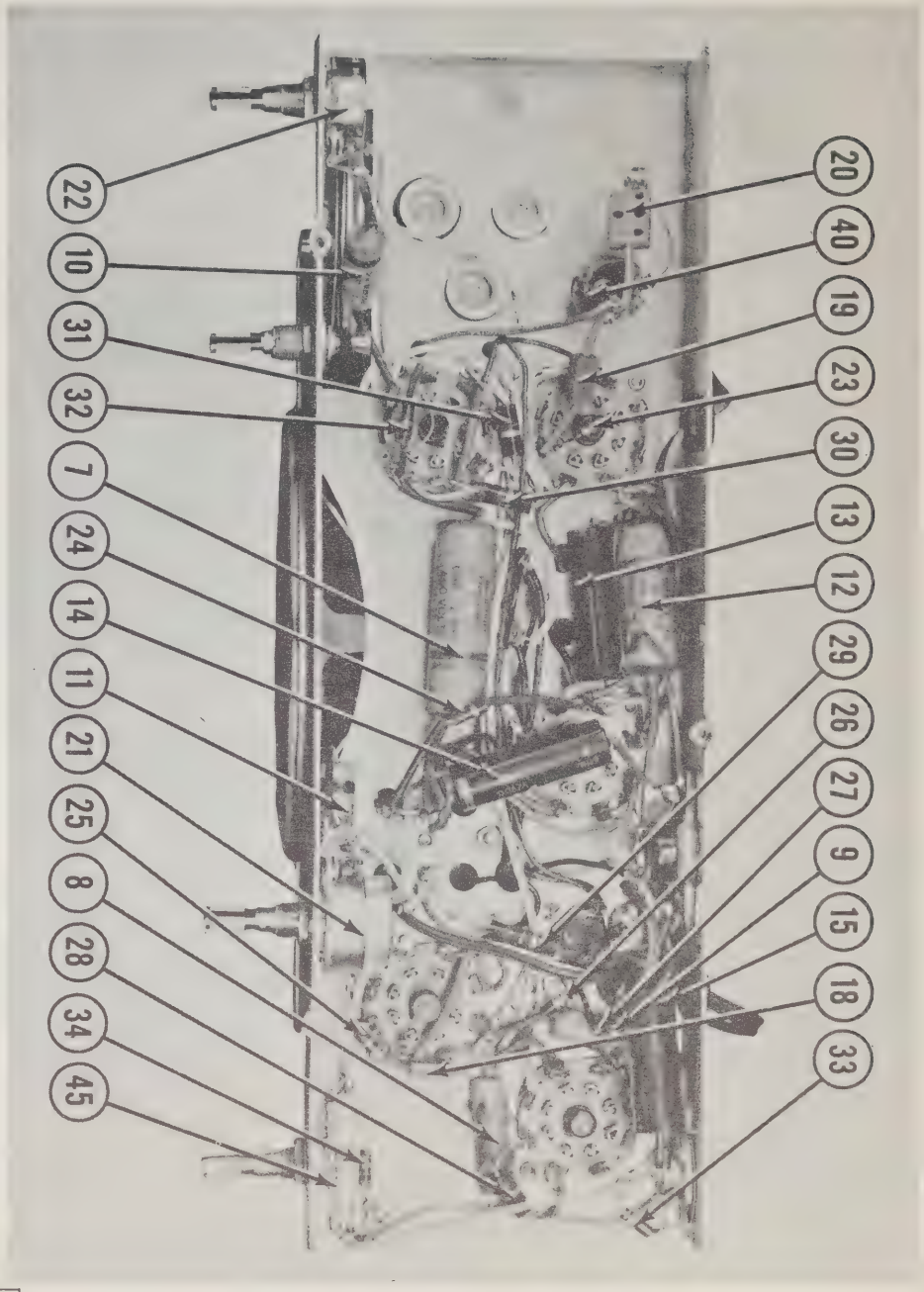
MISCELLANEOUS

ITEM No.	PART NAME	TEMPLE PART No.	NOTES
45	Switch	SR13	Radio-Phono
46	2 Gang Var. Cap	CV6	21-449 MMF, 22-187 MMF

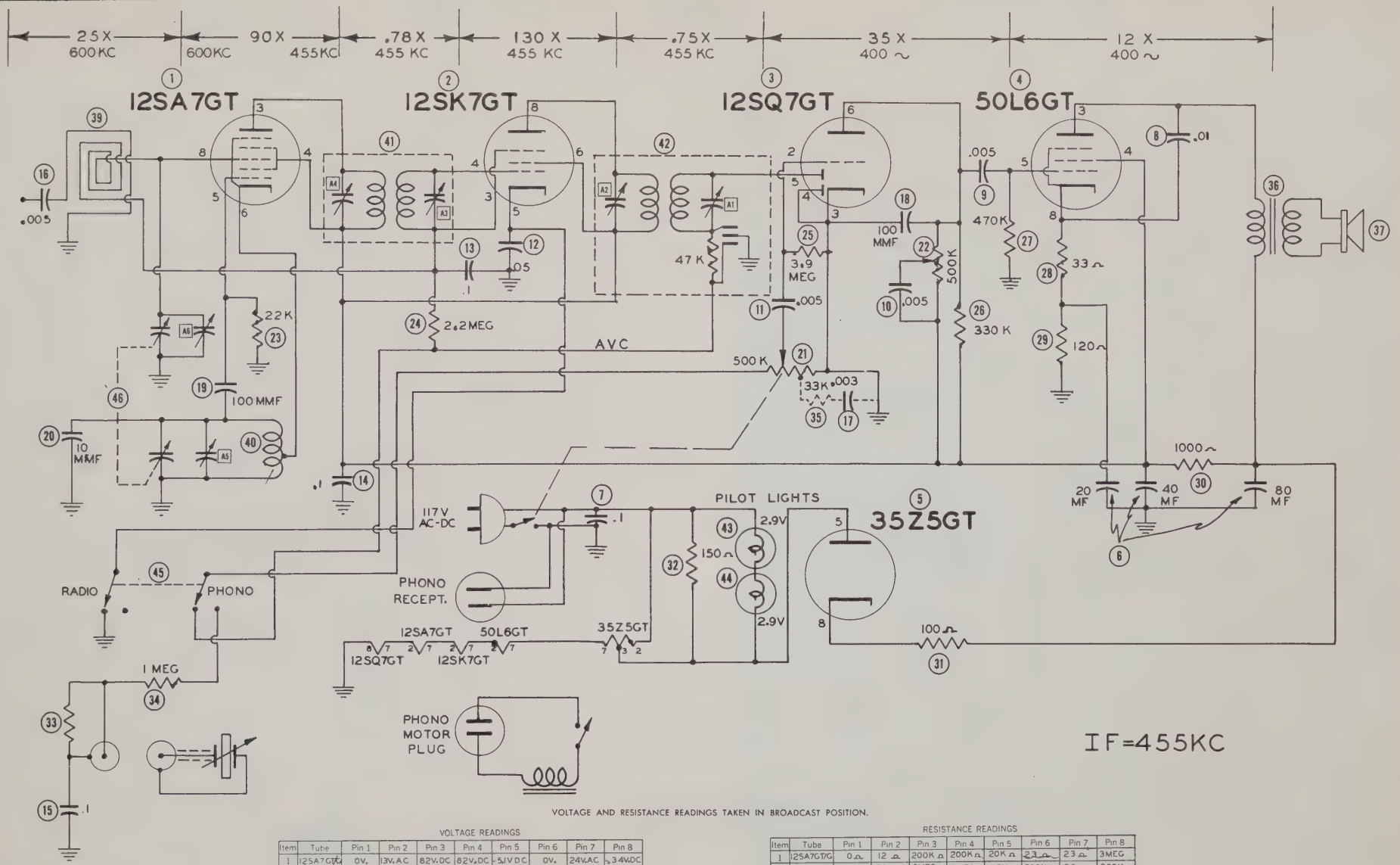


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



TEMPLE MODEL G-516



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT/G	0V.	13V.AC	82V.DC	82V.DC	-5.1V DC	0V.	24V.AC	-34V.DC
2	12SK7	0V.	24V.AC	-34V.DC	-34V.DC	0V.	82V.DC	37V.AC	82V.DC
3	12SQ7GT/G	0V.	-8.1V DC	0V.	0V.	-68V.DC	55V.DC	13V.AC	0V.
4	50L6GT	4.2V.DC	87V.AC	102V.DC	82V.DC	0V.	0V.	37V.AC	5.3V.DC
5	35Z5GT/G	107V.DC	117V.AC	113V.AC	82V.DC	113V.AC	107V.DC	87V.AC	112V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT/G	0 Ω	12 Ω	200K Ω	200K Ω	20K Ω	23 Ω	23 Ω	3MEG
2	12SK7	0 Ω	23 Ω	3MEG	3MEG	0V	200K Ω	35 Ω	200K Ω
3	12SQ7GT/G	0 Ω	3.5MEG	0 Ω.	0 Ω	480K Ω	420K Ω	12 Ω	0 Ω
4	50L6GT	110 Ω	75 Ω	200K Ω	200K Ω	440K Ω	INF.	35 Ω	135 Ω
5	35Z5GT/G	240K Ω	97 Ω	95 Ω	200K Ω	95 Ω	200K Ω	75 Ω	200K Ω

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

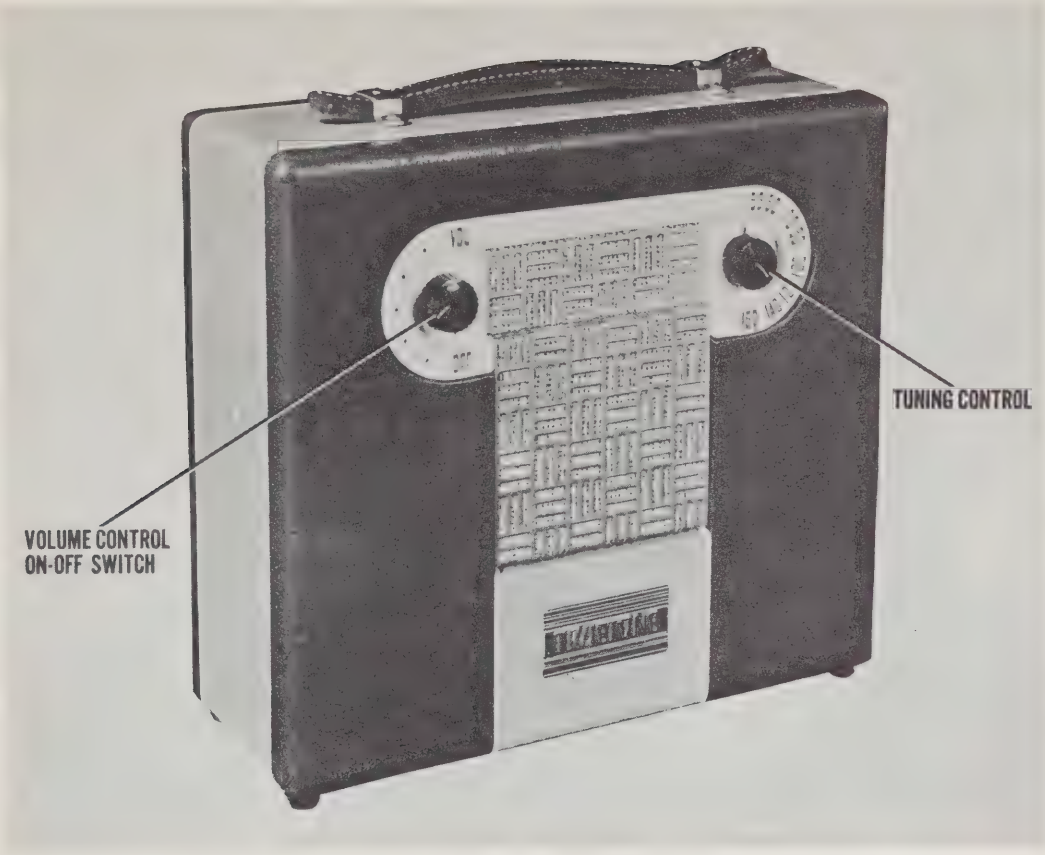
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

478-31

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

TRUETONE
MODEL D 3615 (BATTERY OPERATED)



TRUETONE
MODEL D 3615 (BATTERY OPERATED)

TRUETONE MODEL D3615

TRADE NAME	Truetone, Model D3615 (Factory Model 25BD2-606)
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Three Power Portable Superheterodyne Receiver-Self Contained Loop Antenna
TUBES (FIVE)	Types, 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3Q4 Power Output, 117Z3 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC or 7½ Volt "A" Battery & 90 Volt "B" Battery in Pack Form
RATING	.170 Amp. @ 117 Volts AC or 50MA @ 7.4 Volts DC & 13MA @ 84 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used use an isolation transformer when available. If not, connect a capacitor in series with the low side of the signal generator and B-. Volume should be at maximum position, output of signal generator should be no higher than necessary to obtain output reading. Use an insulated alignment screwdriver for adjusting.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD.	High side to Pin 6 (grid) 1R5. Low side to chassis.	456KC	Tuning cap. fully open.	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to .001 MFD. to reduce hum modulation.
.1 MFD.	"	1600KC	"	"	A5	Adjust for maximum output.
100MMFD	High side to ext. ant. clip. Low side to chassis.	1400KC	Tune for maximum output.	"	A6	Reinstall in cabinet and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D3615

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3Q4	3Q4	7BA	
5	Rectifier	117Z3	117Z3	4BR	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	45X349	PRSA150-40	BRD4415		DSB-2X40-150	TA-440	Filter - Red
B	40	150		-40					" - Green
C	200	35							Fil. Bypass-Yellow
7	.1	400	D67104	484-.1	DT4P1	TP428	S-4-1	TC-1	Line Filter
8	.005	400	D66502	484-005	DT6D5	TP408	S-6-005	TC-25	Output Plate Bypass
9	.005	200	B66502	484-005	DT6D5	TP408	S-6-005	TC-25	Audio Coupling
10	.05	200	B66503	484-05	DT4S5	TP426	S-4-05	TC-15	Audio Screen Bypass
11	.005	200	B66502	484-005	DT6D5	TP408	S-6-005	TC-25	Audio Coupling
12	.05	200	B66503	484-05	DT4S5	TP426	S-4-05	TC-15	AVC Filter
13	.04	200	B66403	484-04	DT4S4	TP425	S-4-04	TC-14	Conv. Screen Decoupling
14	.1	200	B66104	484-.1	DT4P1	TP428	S-4-1	TC-1	Filament Bypass
15	.04	200	B66403	484-04	DT4S4	TP425	S-4-04	TC-14	" "
16	.25	200	B66254	484-.25	DT4P25	TP430	S-4-25	TC-2	RF Bypass Pwr. Supp.*
17	150	500	47X480	1468-00015	5W5T15	MC236	MO.5-315	1FM-315	Audio Plate Bypass
18A	50		47X112	1468-00005	5W5Q5	MC225	MO,5-45	1FM-45	Diode Filter
B	50			1468-00005	5W5Q5	MC225	MO.5-45	1FM-45	" "
19	47	500	47X463	1468-00005	5W5Q5	MC225	MO.5-447	1FM-45	Osc. Grid Capacitor
20	100	500	47X476	1468-0001	5W5T1	MC235	MO.5-31	1FM-31	RF Coupling

*Not used in all models.

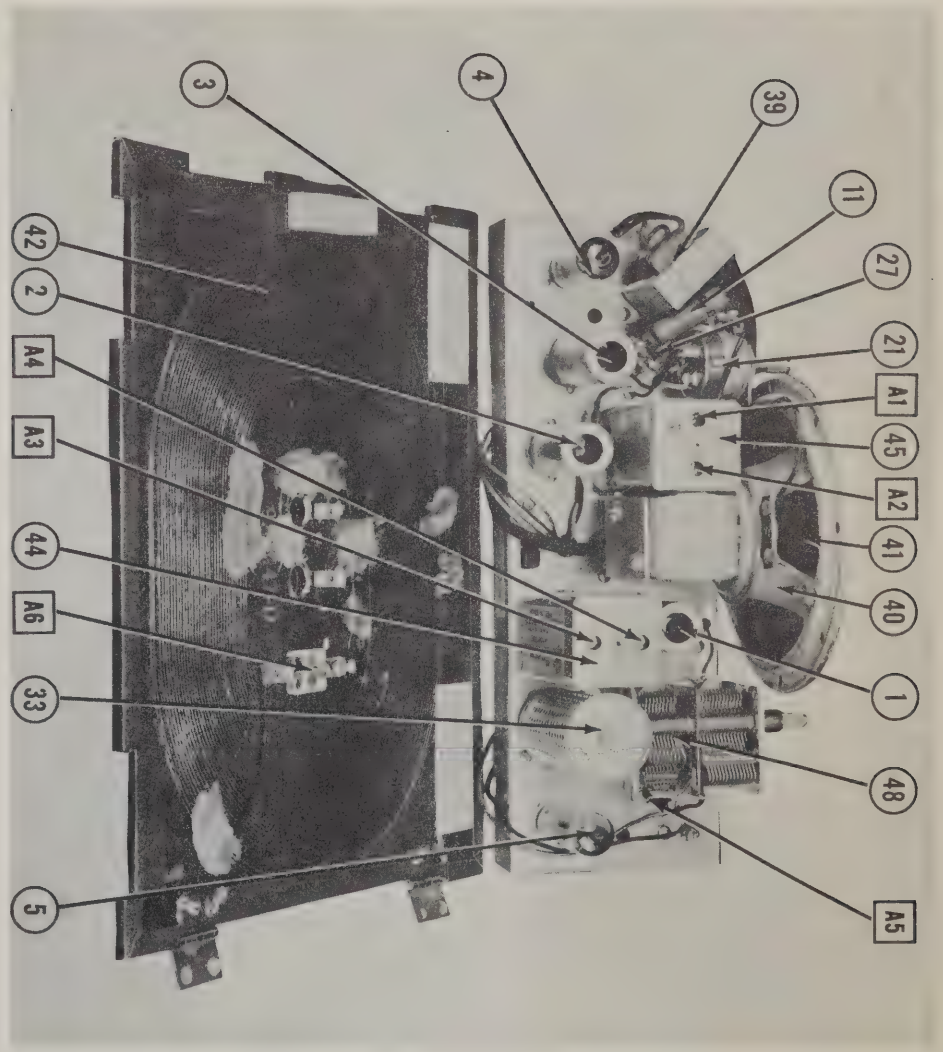
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	1	36X310	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 21A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
22	100KΩ	½	B84104	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
23	22KΩ	½	B84223	BTS-22K	Red-Red-Or. Oscillator Anode Dropping
24	2.2 Meg.	½	B85225	BTS-2.2 Meg.	Red-Red-Grn. Converter Grid
25	2.2 Meg.	½	B85225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
26	47KΩ	½	B85473	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
27	4.7 Meg.	½	B85475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
28	3.3 Meg.	½	B85335	BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen Dropping
29	1 Meg.	½	B85105	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.	
30	3.3 Meg.	½	B85335	BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid
31	2200Ω	½	B84222	BTS-2200	Red-Red-Red Filter
32	27Ω	1	C84270	BW-1-27	Red-Vi.-Blk. Rectifier Ballast
33	2050Ω	7	43X126		Filament String
34	200Ω	1	C83201	BW-1-220	Red-Blk.-Br. Filament String
35	1000Ω	½	B84102	BTS-1000	Br.-Blk.-Red Filament String
36	2400Ω	½	B83242	BTS-2200	Red-Vi.-Red Filament String
37	270Ω	½	B84271	BW-½-270	Red-Vi.-Br. Filament String
38	220Ω	½	B84221	BW-½-220	Red-Red-Br. Filament String

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
39	9500Ω	3.2Ω	640Ω	.5Ω	51X126	A-3879 ‡	T22847 ‡		‡ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRUETONE PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107†		†Drill and tap magnet frame.
40	PM	3.2Ω	12A446	Mod. P5-V		
	CONE DIA.	VC DIA.				
41	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
42	Loop Ant.	.4Ω	3Ω	9A1447		
43	Osc. Coil	2.2Ω	6Ω	9A1836		
44	Input IF	12Ω	16.5Ω	9A1837	16-6658	
45	Output IF	14Ω	11Ω	9A1838	16-6660	

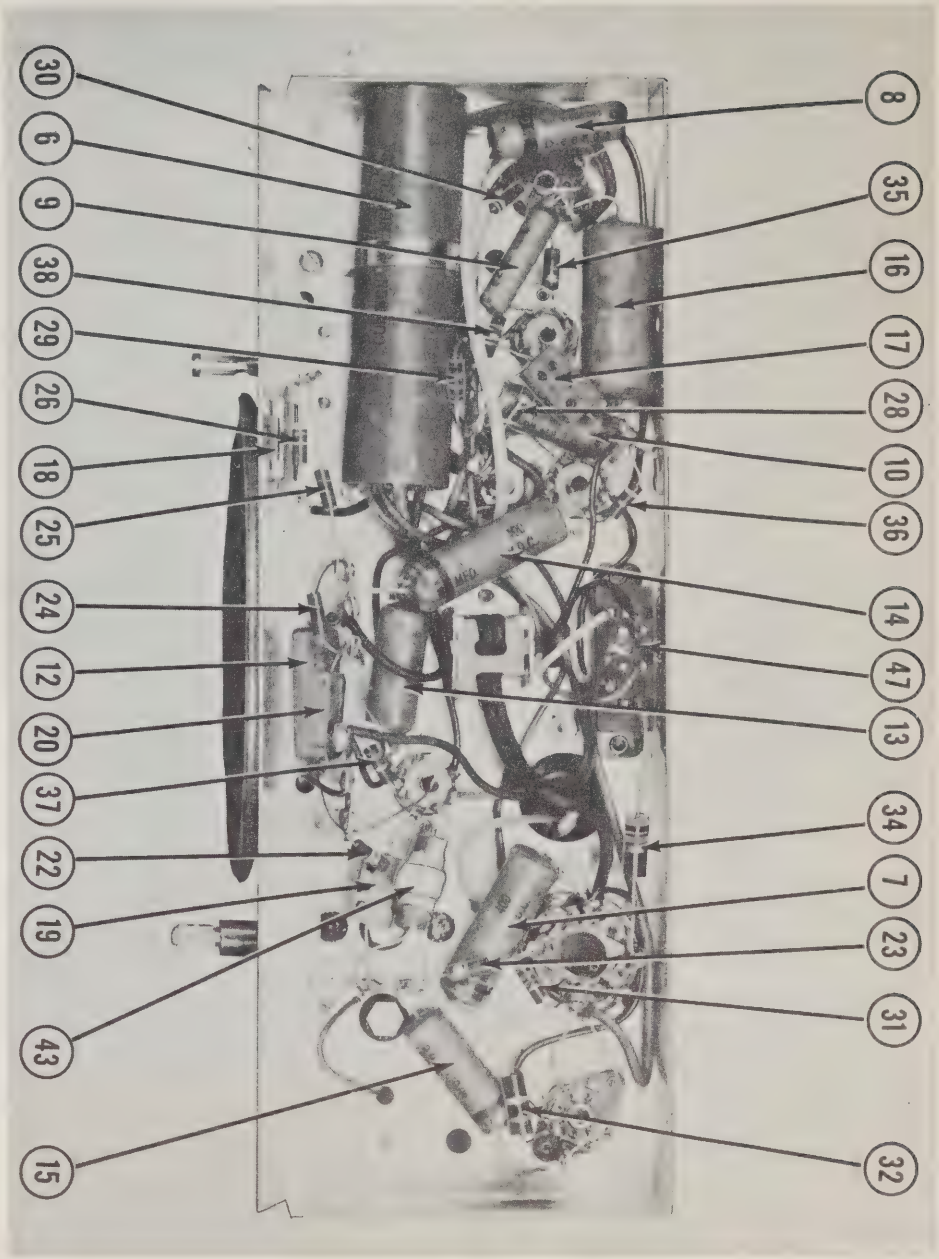
BATTERIES

ITEM No.	VOLTAGE	TRUETONE PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
46	7½V "A" 90V "B"				No.754	

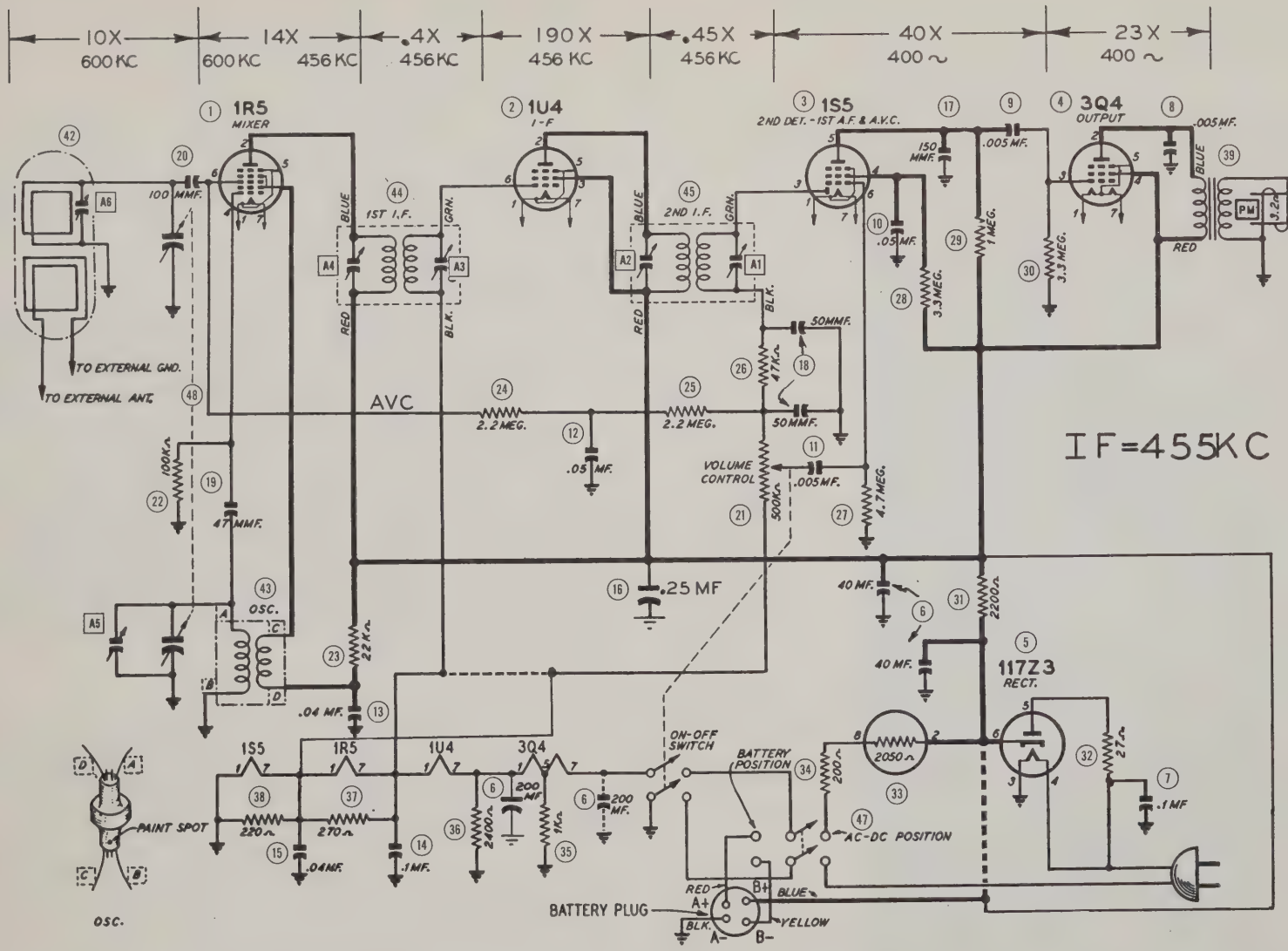
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
47	Switch	2A183	Power Change-Over
48	2 Gang Var. Cap.	14A183	21-474 MMF, 33-192 MMF
	Pointer	15X233	
A6	Trimmer	17A123	1.0-12 MMF (Ant. Adj.)

CHASSIS—BOTTOM VIEW



TRUETONE MODEL D2618



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

Pin No.	1R5 Volt	1R5 Res	1U4 Volt	1U4 Res.
1	1.4 V.DC	*	3 V.DC	*
2	89 V.DC	4000 Ω	89 V.DC	4000 Ω
3	50 V.DC	25K Ω	89 V.DC	4000 Ω
4	.7 V.DC	90K Ω	OV.	INF.
5	1.4 V.DC	*	3 V.DC	*
6	OV.	4.5MEG.	3 V.DC	42 Ω
7	3 V.DC	*	4.4 V.DC	*

Pin No.	1S5 Volt	1S5 Res	3Q4 Volt	3Q4 Res.
1	OV.	*	4.4 V.DC	*
2	OV.	INF.	86 V.DC	4800 Ω
3	OV.	585K Ω	OV.	3.5MEG.
4	1.5 V.DC	3.3MEG.	89 V.DC	4000 Ω
5	7.2 V.DC	1MEG.	5.9 V.DC	*
6	OV.	4 MEG.	8.6 V.DC	4800 Ω
7	1.4 V.DC	*	7.2 V.DC	*

Pin No.	117Z3 Volt	117Z3 Res
1	117 V.AC	420 Ω
2	OV.	INF.
3	OV.	0 Ω
4	117 V.AC	410 Ω
5	117 V.AC	435 Ω
6	128 V.AC	2000 Ω
7	OV.	INF.

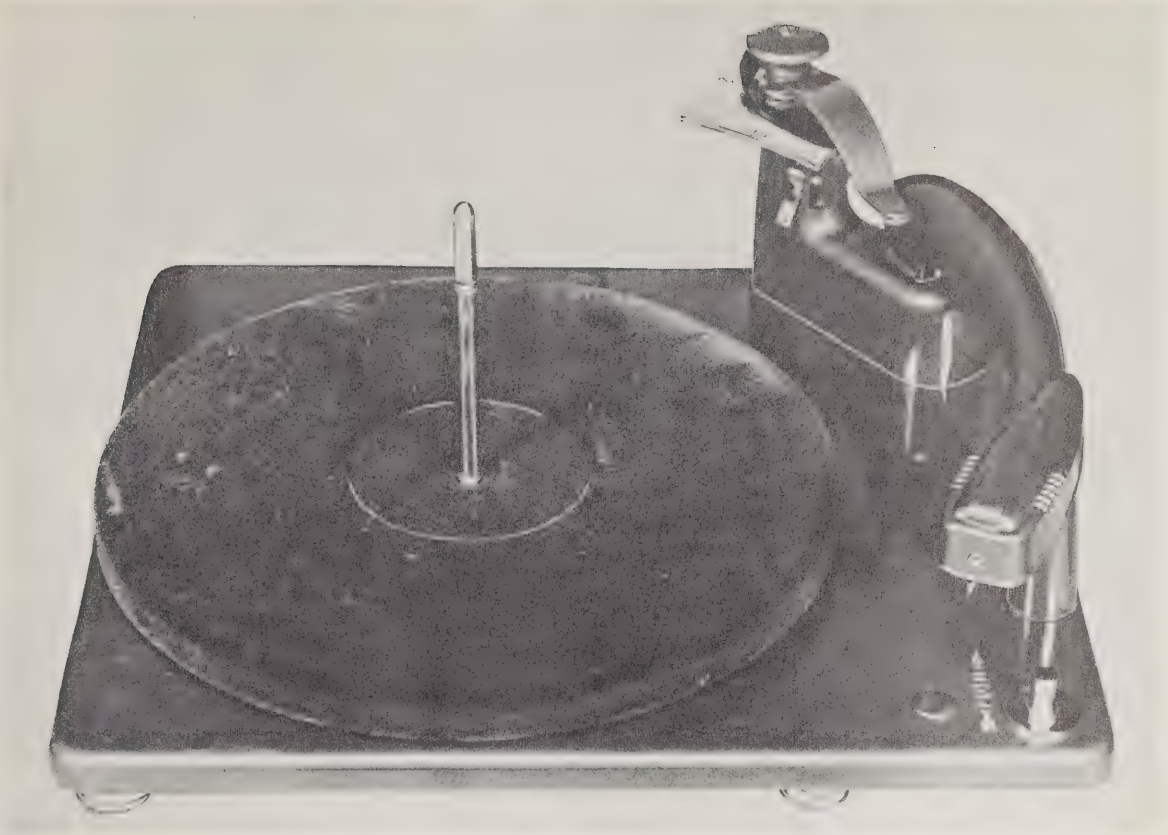
*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE 478-32

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



TOP VIEW

GENERAL INFORMATION

This changer is a single post changer designed to play up to ten 10-inch or eight 12-inch records. A total of eight records intermixed may be played. The changer will shut off automatically at the end of the last record. The motor is designed for 115-volt, 60-cycle operation.

Manufactured by LEAR INCORPORATED, HOME RADIO DIVISION
110 Ionia Avenue, N. W., Grand Rapids 2, Michigan

MANUAL OPERATION

1. Twist the top of the spindle so it aligns with the bottom of the spindle to form a smooth shaft.
2. Turn the record clamp out of the way.
3. Turn the record support to the 12-inch position.
4. Place the record on the turntable. Placing the pick-up on the record will automatically start the motor.
5. When the record is finished, the pickup will automatically return to its rest post and shut off.

AUTOMATIC OPERATION

1. Turn the spindle cap ½ turn so that a step appears.
2. Turn the record support for the size records to be played.
3. To intermix records, turn the record support to play 12-inch records. It is recommended that the first and last record be of 12-inch size and that a few 12-inch records be alternated with the 10-inch size.
4. Place the records on the spindle so they rest on the record support. Turn the record clamp so that it rests on the stack of records.
5. Push the control button toward the tone arm rest. This turns the motor on and starts the change cycle.
6. To stop the changer, remove all unplayed records from the record support. When the record on the turntable is finished, the tone arm will automatically return to its rest post and shut the changer off.
7. Twist the spindle cap to form a smooth spindle and lift the records off the turntable.

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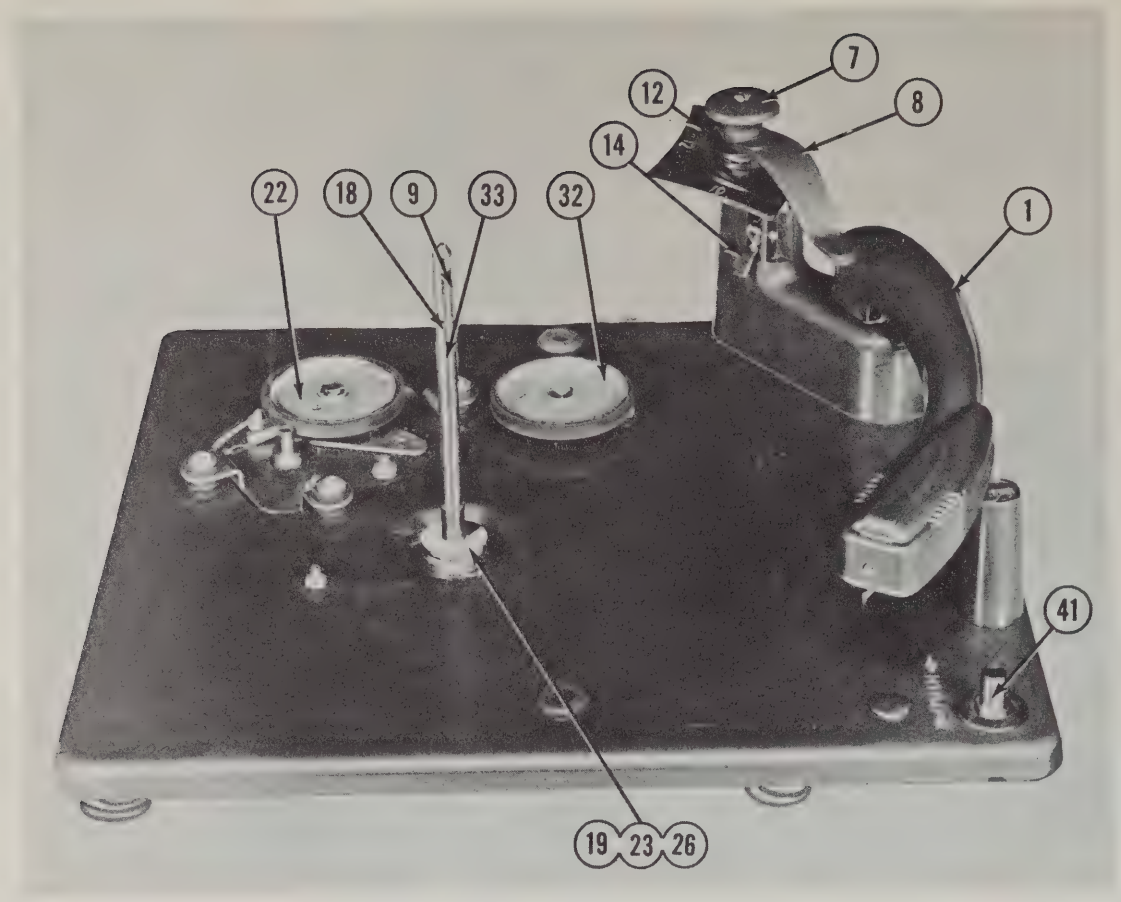
LEAR
MODEL PC-206A

LEAR
MODEL PC-206A

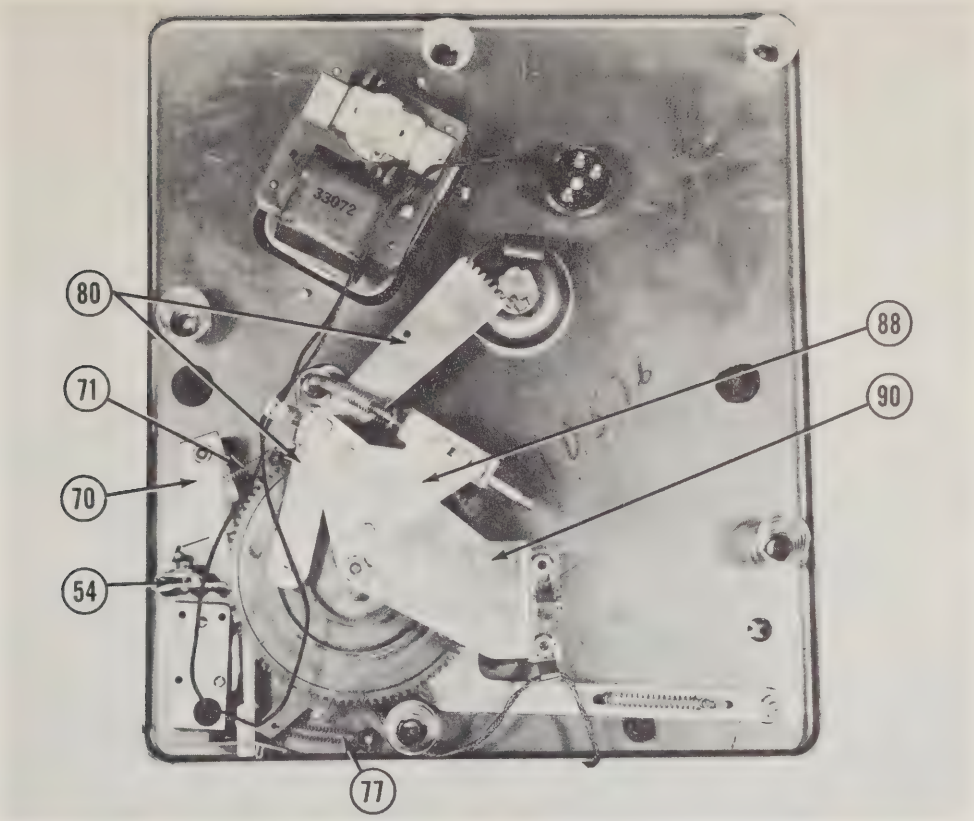


TOP VIEW LESS TURNTABLE

THE CHANGE CYCLE

The change cycle may be started by pushing the control button (41) toward the rest post. This pushes the reject arm and switch assembly (48) away from the switch-off assembly (70), starting the motor and turntable. It also disengages the trip lever (67). The carrier lever (57), which is pivoted on the trip lever, moves the drive wheel (32) against the turntable rim. The rotation of the drive wheel is transmitted to the worm gear (87) by means of the flexible drive shaft (86). The worm gear drives the main cam (78), which controls the action of the change cycle. The bottom side of the main cam controls the action of selecting the records. The roller (79) on the selecting arm (80), riding about the cam results in a forward and backward movement of the selecting arm. The selecting arm drives the pinion (82) which is fastened to the eccentric shaft (18). The eccentric turns through 180 degrees to pick up a record, then turns back into alignment with the spindle to drop the record on the turntable. The top side of the main cam (78) controls the movement of the tone arm. As the cam rotates, the lift rod (5) rides on the outer edge of the cam, lifting the tone arm (1) off the record. The crank assembly (75), which is fastened on the post and hinge assembly (6), rides in the inner part of the cam, controlling the direction and positioning of the tone arm. With records on the record support (12) and the record clamp resting on the records, the positioner (54) is held down by the compression spring (30A).

The height of the positioner determines the position at which the pickup will set down at the end of the cycle. With records on the support post and the record clamp resting on the records, the positioner will be held down so the set-down control lever (74) will contact the upper surface of the positioner. In this position



BOTTOM VIEW

the arm will be stopped for 10-inch records.

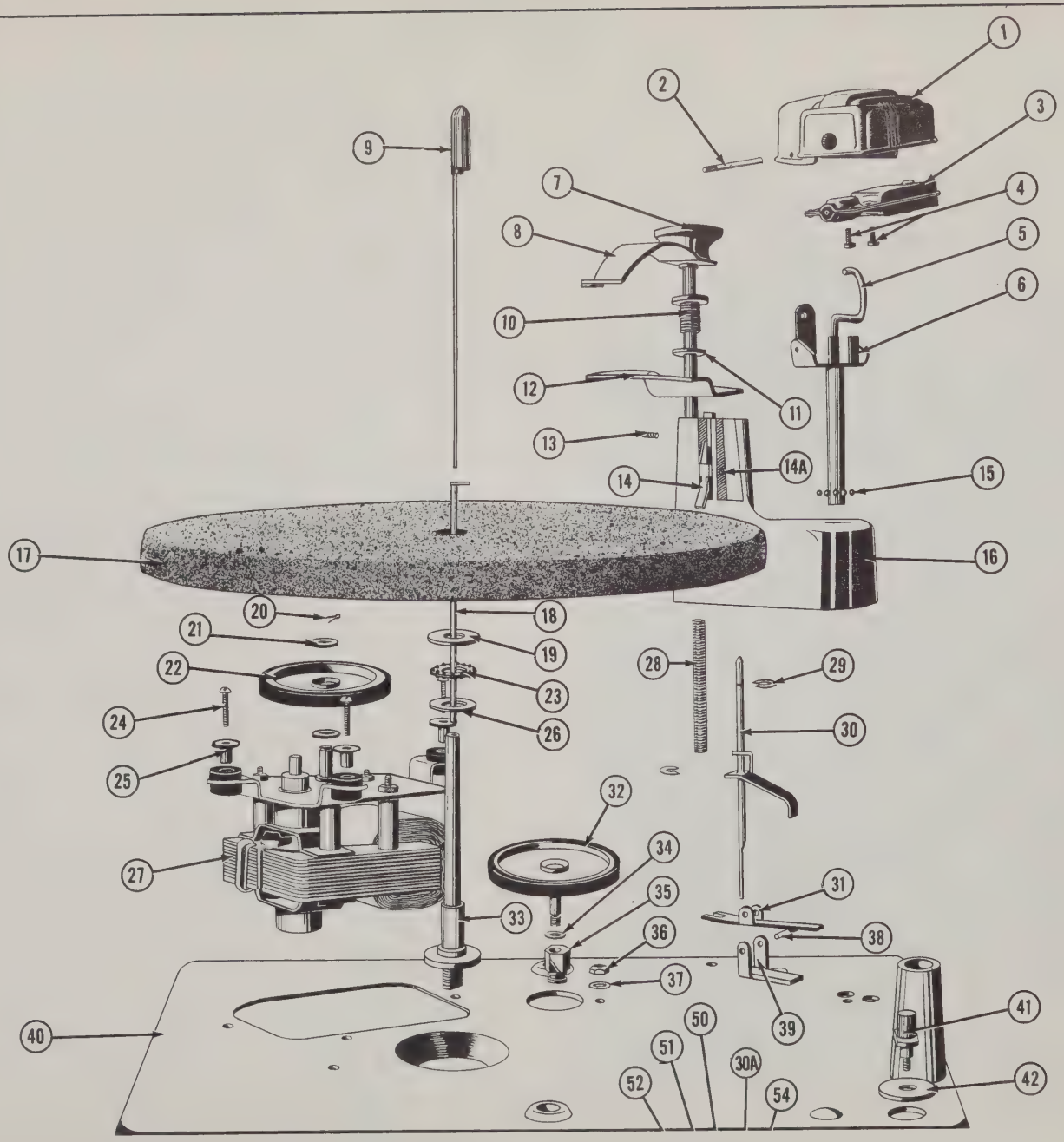
A 12-inch record, in falling on the turntable, will trip the selector arm (14), raising the positioner just enough to allow the set-down control lever (74) to fall in the slot. This will position the arm properly for 12-inch records.

After the last record has been played, the record clamp is no longer held up and the positioner rises enough to allow the set-down control lever to miss it entirely. In this position, the set-down control lever will cause the arm to set down on the rest post.

As the tone arm is positioned, the lift rod (5), riding on the rim of the cam, rides down the inclined surface, lowering the tone arm to the record. At the end of the change cycle, a boss on the main cam moves the set-down control lever out of the way so the tone arm may move freely across the record. The trip lever (67), latching the main cam, causes the drive wheel to be pulled away from the turntable, thus stopping the movement of the main cam.

As the tone arm approaches the spindle, the crank hits the trip screw on the latch assembly (67). This trips the changer, re-engages the drive wheel (32) with the turntable rim and starts a new cycle.

When the last record has been dropped to the turntable, the record clamp (8) drops down with the aid of the compression spring (28). The horseshoe washer on the record clamp shaft comes in contact with the last record arm (31), pushing up on the arm positioner assembly (30) and allowing the set-down control lever to miss the positioner. The crank will then come in contact with the outer tip of the set-down control lever (74), causing the tone arm to rest on the rest post and the crank pivots enough to come in contact with the switch-off assembly, shutting the changer off. The changer will be shut off only at the end of the cycle since the pivoted end of the switch-off assembly (70) is held away from the switch during the change cycle.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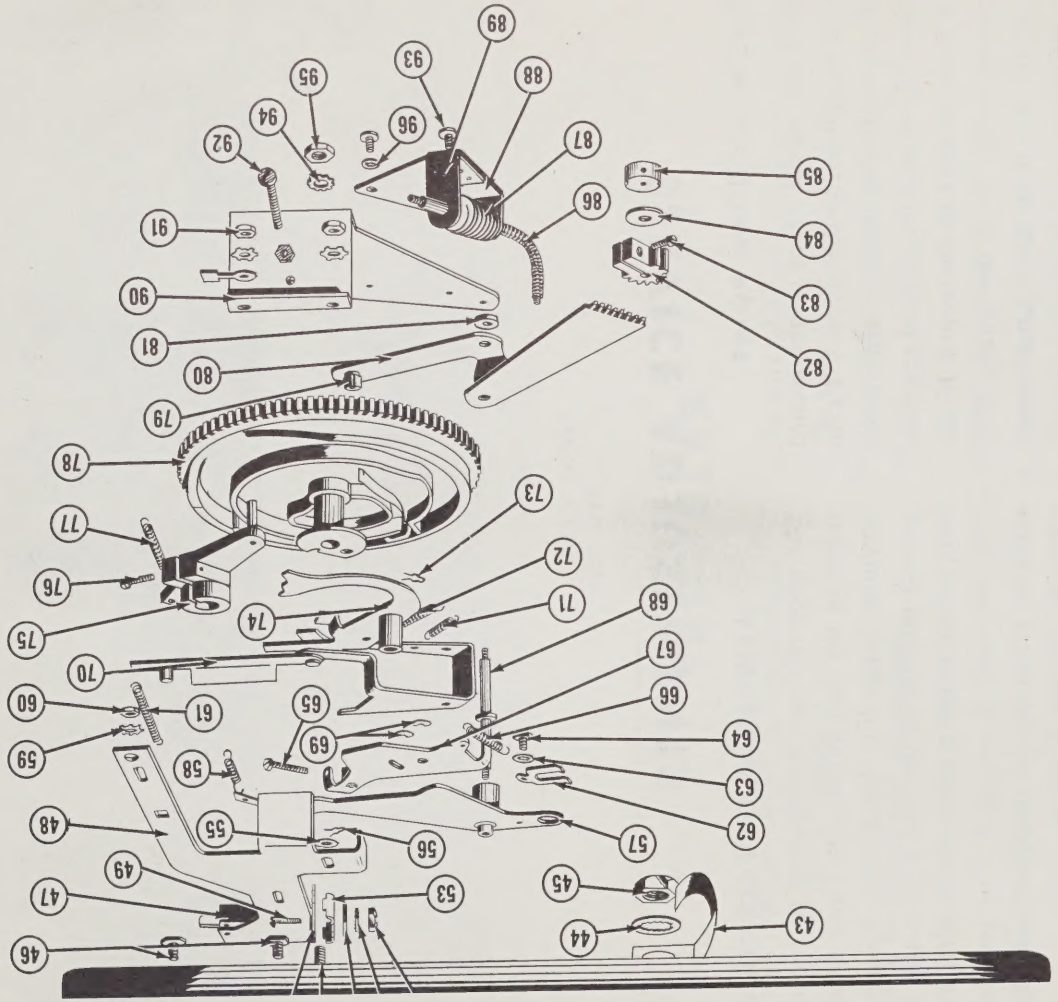
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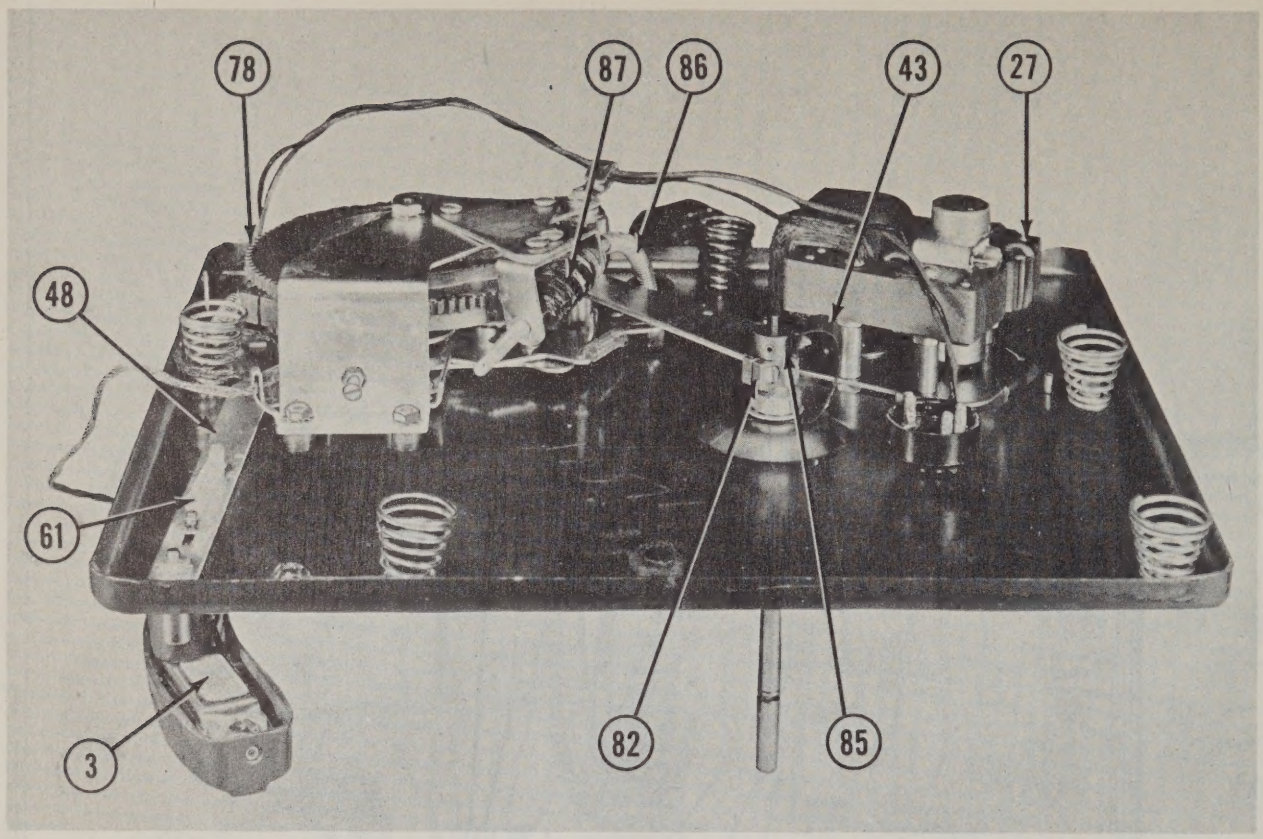


FRONT VIEW

SERVICE ADJUSTMENTS

TONE-ARM SET-DOWN POINT

The point where the needle drops on the record may be adjusted by loosening the screw (76) on the crank (75), and moving the tone arm in the desired direction. The needle should land approximately 1/8 inch from the edge of the record. If this operation is unsuccessful, check the spring (72) on arm (74) to see if it is fastened. Check positioner (54) to see that it works freely. For 10-inch records, the arm (74) should come in contact with the upper step of the positioner. For 12-inch records, the arm should slide in the slot of the positioner.

POSITIVE TRIP

The trip point is adjusted by screw (65) on the latching assembly (67). By turning the screw clockwise, the tone arm will travel nearer the spindle. By backing the screw out, the changer will trip sooner.

ALIGNMENT OF ECCENTRIC

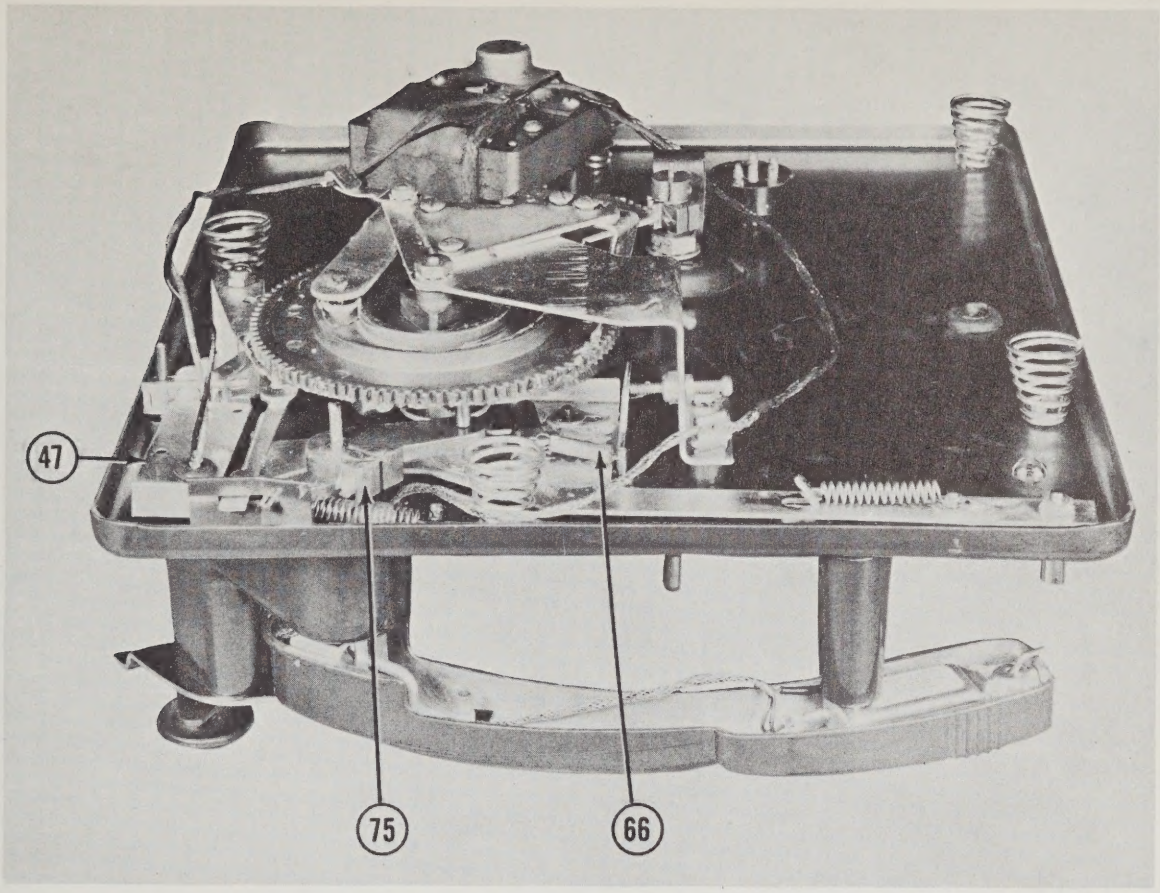
The eccentric may be adjusted by loosening the screw in the feed pinion (82) and adjusting the eccentric so that it is aligned with the spindle. The normal relation of the feed pinion and the dropping arm lever (80), when not in cycle, is such that only one tooth is engaged. The position of the eccentric is correct if it is aligned with the spindle when the changer is not in cycle.

ALIGNMENT OF SPINDLE CAP

Loosen the two set screws holding the index lock (85) and rotate the cap until it is aligned with the spindle, with the spindle spring (43) in the detent. Retighten the set screws.

DRIVE WHEEL ADJUSTMENT

The position of the drive wheel (32) may be adjusted by rotating the eccentric bushing (35). The adjustment should be such that the drive wheel is just clear of the turntable when the changer is not in cycle.



SIDE VIEW

TROUBLES

1. Changer trips before record is completed.

a. Turn trip screw (65) clockwise.

2. Changer fails to trip at end of record.

a. Turn trip screw (65) counterclockwise.

3. Set-down point improper.

a. Check spring (72) to see if it is fastened.

b. Check positioner (54) to see if it is working freely and if it engages the set-down control lever (74) correctly. Set-down control lever engages the upper tip of the positioner for 10-inch size. The lever slides in the slot of the positioner for 12-inch position.

4. Turntable speed slow.

a. Clean any grease or oil from turntable and idler wheel with carbon tetrachloride.

b. Be sure drive wheel adjustment is correct.

c. Be sure idler wheel plate does not bind.

d. Be sure idler tension spring has sufficient tension. If necessary five to eight turns may be cut off.

5. Stalling in cycle.

a. Check mesh of worm gear and main cam. Loosen if necessary.

b. Check for oil on turntable and drive wheel.

c. Check spindle assembly to see if all parts work freely.

6. Pickup height incorrect.

a. Adjust by bending the arm of the lift rod (5).

7. Records fail to drop.

a. Check meshing of the pinion (82) and the dropping arm selector (80).

PARTS LIST

No.	Part No.	DESCRIPTION
1	33296	Tone Arm
2	33235	Hinge Pin
3	33295	Crystal Cartridge
4		Pickup Cartridge Mounting Screws— No. 4-40 x 1/4
5	33163	Lift Rod
6	33239	Post and Hinge Assembly
7	33200	Record Clamp Knob
8	33394	Finger for Record Clamp Assembly
9	33251	Shaft and Tip Assembly
10	33087	Pedestal Plug
11	33321	Tension Washer
12	33314	Record Support
13		Allen Set Screw
14	33164	Selector Arm
14A	33246	Selector Arm Axle
15	26032-02	Ball Bearings
16	33308	Pedestal
17		Turntable
18	33245	Eccentric and Shaft Assembly
19	6918	Washer for Turntable
20	29379-01	Hair-Pin Cotter
21		Flat Washer
22	33151	Idler Wheel
23	33273	Ball Bearing Thrust
24	11061	Screw
25		Spacers
26	6918	Washers for Turntable
27	33112	Motor and Drive Assembly
28	31656-04	Compression Spring
29	33371	Horseshoe Washer
30	33393	Positioner Arm Assembly
30A	31656-07	Compression Spring
31	33150	Last Record Arm
32		Drive Wheel
33	33252	Spindle Assembly
34		Washer
35		Eccentric Hub
36		Mounting Nut 8-32
37		Lock Washer
38	33199	Last Record Arm Pin
39		Bracket for Last Record Arm
40	33289	Base Assembly
41	34703	Reject Button
42	54002	Washer
43	33059	Detent Spring
44	56202	Lock Washer
45	33347	Hex Jam Nut
46	33269	Pedestal Screw
47		Switch (Part of 48)
48	33418	Reject Arm and Switch Assembly
49	11058	Round Head Screw
50	29567-10	Plain Washer
51	56239	Lock Washer
52	12937	Nut
53	33302	Positioner Clip
54	33155	Positioner
55	29567-11	Plain Washer
56	29379-1	Hair Pin Cotter
57	33364	Carrier Lever (Latch Assembly)
58	33205-04	Tension Spring
59	56240	Lock Washer
60	12941	Nut
61	33205-05	Tension Spring
62	33171	Power Arm Clip
63	29567-12	Plain Washer
64	10887	Screw
65		Position Trip Adjustment Screw
66	33205-02	Tension Spring
67	33364	Trip Lever (Latch Assembly)
68	33053	Shaft
69		Horseshoe Washers
70	33368	Switch Off Assembly
71	33205-07	Tension Spring
72	33205-03	Tension Spring
73	29379-1	Hair Pin Cotter
74	33238	Set-down Control Lever
75	33287	Crank Assembly
76		Crank Assembly Clamp Screw
77	33205-01	Tension Spring
78	33835	Cam Assembly
79	33182	Drop Arm Roller
80	33247	Dropping Arm Assembly
81	29567-13	Plain Washer
82	33039	Pinion
83	11139	Fil. Head Screw
84		Plain Washer
85	33038	Lock
86	33416	Power Take Off Assembly
87	33086	Worm Gear
88	33168	Worm Support
89	33169	Worm Support Angle
	33172	Flywheel (Early Production)
90	33309	Mounting Bracket Assembly
91	12941	Nut
92	11151	Fil. Head Screw
93	10887	Screw
94		Lock Washer
95	12944	Nut
96		Lock Washer